INFLUENCING TRANSNATIONAL TERRORIST ORGANIZATIONS:
USING INFLUENCE NETS TO PRIORITIZE FACTORS

GRADUATE RESEARCH PROJECT

Roy P. Fatur, Major, USAF

AFIT/GOS/ENS/05-06

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

AFIT/GOS/ENS/05-06

INFLUENCING TRANSNATIONAL TERRORIST ORGANIZATIONS: USING INFLUENCE NETS TO PRIORITIZE FACTORS

GRADUATE RESEARCH PROJECT

Presented to the Faculty

Department of Operational Sciences

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the

Degree of Masters in Operational Sciences

Roy P. Fatur

Major, USAF

June 2005

AFIT/GOS/ENS/05-06

INFLUENCING TRANSNATIONAL TERRORIST ORGANIZATIONS: USING INFLUENCE NETS TO PRIORITIZE FACTORS

Roy P. Fatur

Major, USAF

Approved:

_____   _____
Dr. Richard F. Deckro (Advisor)   Date

AFIT/GOS/ENS/05-06

Abstract

Since the attacks of September 11, 2001, government agencies and scholars have combined to generate a wide range of studies and literature describing individual factors believed to influence the transnational terrorist threat against the United States. Given the fiscal reality of limited resources, the United States cannot fully fund and implement a complete set of measures to counteract all the identified factors. The purpose of this study is to consolidate this array of factors; and more importantly, to suggest a framework for analyzing the interactions and relative importance of each factor to support resource allocation decisions. A comprehensive literature review identified 13 factors having potential influence. These factors were then analyzed using an Influence Net approach. Utilizing notional interaction and influence assessments, the suggested framework highlighted six of the factors with relatively greater potential to influence the terrorist threat. These six factors span the temporal spectrum from near-term impacts targeted against the existing terrorist threat to long-term strategies directed at influencing the "next generation" terrorist threat. Focusing on the near-term, eliminating or neutralizing both the terrorist leadership and their followers was highly influential in the model. Improving intelligence capabilities as well as our information operations and public diplomacy campaigns significantly impacted both the near and long-term threat. Finally, influencing the long-term terrorist threat was best accomplished through a combination of reducing resentment toward the United States, with Israeli policy as a driving factor; and reduction of the underlying causes of terrorism, with elimination of repressive regimes as the primary factor.

Table of Contents

List of Figures

List of Tables

INFLUENCING TRANSNATIONAL TERRORIST ORGANIZATIONS:

USING INFLUENCE NETS TO PRIORITIZE FACTORS

1. Introduction

1.1. Background

> We will direct every resource at our command -- every means of diplomacy, every
> tool of intelligence, every instrument of law enforcement, every financial
> influence, and every necessary weapon of war -- to the disruption and to the
> defeat of the global terror network. This war will not be like the war against Iraq
> a decade ago, with a decisive liberation of territory and a swift conclusion... Our
> response involves far more than instant retaliation and isolated strikes.
> Americans should not expect one battle, but a lengthy campaign, unlike any other
> we have ever seen... We will starve terrorists of funding, turn them one against
> another, drive them from place to place, until there is no refuge or no rest. And
> we will pursue nations that provide aid or safe haven to terrorism. (President
> Bush, September 20, 2001)

These words spoken by President Bush provided the initial framework for the

United States' War on Terrorism just nine days following the terrorist attacks on the

World Trade Center, the Pentagon, and the tragedy in the fields of Pennsylvania.

Seventeen days after this speech, on October 7, 2001, President Bush authorized military

strikes against Al Qaida terrorist training camps and military installations of the Taliban

regime in Afghanistan (President Bush, October 7, 2001). America's Global War on

Terror had begun. Sixteen months after the first strike on Afghanistan, the United States

published the official National Strategy for Combating Terrorism. As published, the

focus of the National Strategy is on terrorist threats with global reach, or more

specifically, transnational terrorist organizations (National Strategy, 2003: 16). The

Strategy revolves around four interrelated fronts to combat such organizations. The first is to defeat existing terrorist organizations by attacking their sanctuaries, leadership, communications, and finances. Next, we will deny further sponsorship, and sanctuary from supporting or exploited states. Third, we will diminish the underlying conditions the terrorists rely on for support and recruiting. Finally, we will defend the United States, its citizens, and interests both domestically and abroad (National Strategy, 2003: 11).

While well-articulated and comprehensive, the strategy does not set priorities in defining the level of effort for each front and corresponding subtask. In addition, is the Strategy's list of tasks exhaustive? In the nearly four years since the terrorist attacks of September 11, 2001, have additional factors been recognized as potential sources of influence on the transnational terrorist organizations? Arguably, all of the Strategy's identified tasks are equally important; but given the reality of limited financial, material, and human resources, which provide the greatest probability for impacting the current and future actions of the terrorist organizations? This study attempts to answer the first question and suggest an analytical framework for addressing the second question.

1.2. Problem Statement

The purpose of this study is divided into two phases. The first is to identify the various factors with potential to influence the transnational terrorist organizations' will and capability to continue their actions. The intent of this first phase of the study is to provide a macro-level review of the potential influencing factors for inclusion in an overarching strategy. The scope of this phase does not seek to include the "tactics" of how to accomplish each factor; more simply, the study suggests what to do, not how to

do it. With the factors identified, the second phase of the study develops a framework for analyzing the interactions and relative importance of each factor with respect to the strategy as a whole. In other words, which factors have the greatest potential to influence the actions of current and future transnational terrorist organizations?

The first phase of the study was accomplished by conducting a comprehensive literature review of the applicable work regarding transnational terrorist organizations. The emphasis of the review was on literature published since September 11, 2001. As expected, the applicable literature focused heavily on examples derived from the Al-Qaida terrorist network.

The second phase of the study presents a framework for analyzing the identified factors, their interactions, and relative potential to influence the behavior of the terrorist organizations. Several analytic techniques with corresponding software applications are currently available for conducting such investigations, some more rigorous than others, and each with their own respective strengths and weaknesses. For this study, an Influence Net approach using the Situational Influence Assessment Module (SIAM) software was selected. The presented model incorporates all the factors identified in the first phase of the study, with notional factor interactions and influence probabilities. In this regard, the scope of this study was to provide an analytic framework. Details regarding each factor provided by their applicable subject-matter experts would be required to make the model operationally valid.

In addition to suggesting a specific modeling approach to the problem, a secondary goal of this study was to motivate further research toward developing an array

of techniques to capture the breadth of the War on Terrorism modeling problem. To this point, the literature suggests an emphasis on identifying the potential influencing factors, with many published by subject-matter experts with unintended, but potentially biased opinions reflecting their area of expertise. A greater amount of research is required to synthesize the varied inputs into all-encompassing models to mitigate these biases and provide decision-makers with useable prioritization and resource allocation-oriented output.

1.3. Summary

This introduction highlighted the need to conduct a macro-level review of the relevant factors in prosecuting the War on Terrorism, as well as the need for analytical methods to determine resource allocation priorities for the identified factors. Chapter 2 reviews the relevant literature with respect to each influencing factor. Again, the intent is to describe which factors have potential for influence and why they have that potential, not necessarily to detail how to implement each factor. Chapter 3 presents an overview of SIAM. Potential strengths and weaknesses of SIAM are discussed. The potential interactions of the thirteen factors identified in the study are then investigated to develop the baseline influence net. To demonstrate the potential of the approach, Chapter 4 presents the results of the baseline model's sensitivity analysis based on notional probability data. Finally, Chapter 5 includes the conclusions, recommended readings, and recommendations for further research.

2. Literature Review

2.1. Introduction

This section provides an overview of the potential factors influencing the activities of transnational terrorist organizations. As stated in the introduction, the intent is not to identify interactions among factors or to quantify associated probabilities. The intent is to identify as many key factors as possible in order to develop as robust an influence net as possible. Each section provides a summary of the respective issue identified in the study. Clearly, each section could be the topic of its own more detailed study with the goal of developing a higher fidelity of policy options and impact potentials. The review was limited to open-source information.

Before identifying potential factors for bringing about the cessation of terrorist activities, the enemy or target must be clearly defined. Who exactly are we trying to influence? Mikolus defined terrorism as "the use, or threat of use, of anxiety-inducing extranormal violence for political purposes by any individual or group" (Mikolus, 2002: 151). This definition, however accurate, is too broad for our purposes, in that it includes both domestic and cross-border entities. The intent of this study is to focus on external terrorist organizations that threaten the United States and its interests, not the ever-present domestic threats, such as the Unabomber or the Oklahoma City bombers. Following a comprehensive review of 109 terrorist definitions, Victoroff found two common themes (Victoroff, 2005: 4). First, terrorism involves aggression against non-combatants. Second, terrorist actions are not necessarily politically-motivated, but are more intended to influence and change the behavior of the target in order to further the

interests of the terrorist (Victoroff, 2005: 4). Again, these themes help to frame the definition of our enemy, but are too broad in their context. In defining the threat, The National Strategy for Combating Terrorism describes the relative demise of state-sponsored terrorism due to a combination of counterterrorism efforts and the collapse of the Soviet Union. At the same time, restrictions on international commerce, communication and travel were being reduced, providing the ideal setting for the rise of global or transnational terrorist organizations. Taking advantage of this setting, Al-Qaida has become the quintessential transnational terrorist organization with operations spread across more than 60 different countries (National Strategy, 2003: 7). The National Strategy is thus designed to stop terrorist attacks against the United States, its people, interests, and allies around the world from this external, global threat (National Strategy, 2003: 11). Preventing terrorist attacks within the borders of the United States warrants its own strategy designated by the Department of Homeland Security (National Strategy, 2003: 2). This study will focus on identifying influential factors in combating the transnational, global terrorist threat.

In attempting to define strategies, Victoroff defines two approaches to account for terrorist behavior. The first, the top-down approach, seeks to identify the root cause of terrorism in political, social, and economic circumstances. The second, the bottom-up approach, seeks to identify the characteristics of the individuals and groups that turn to terrorism (Victoroff, 2005: 11). These two approaches could be modified to develop a second method for choosing alternative strategies to combat terrorism. The top-down approach could be redefined as seeking to identify those factors that may influence

existing terrorists and their organizations. The bottom-up approach could be redefined as seeking those factors that may influence the "next generation" of terrorist organizations and their recruitment efforts. Alternatively, a third method could incorporate a top-down approach focused on the terrorist leaders with a bottom-up approach focused on the terrorist followers. For the purposes of this study, the second of the three methods was used. Thirteen potential factors which could influence either or both of the approaches are identified and documented. Those factors commonly believed to be influencing, to a greater extent, the current terrorist threat will be presented first, followed by those factors commonly felt to be influencing, to a greater extent, the future terrorist threat.

2.2. Leadership

To combat the existing terrorist threat, attacking leadership has been a familiar strategy in recent conflicts, whether through direct attack or indirect isolation. In Operation Enduring Freedom, direct attacks on Al Qaida leadership and organizational capability were one of the coalition's primary goals (Conetta, 2002: 3.1). Similarly, in Operation Iraqi Freedom, direct attack on leadership was evidenced by U.S. Central Command's distribution of the 55-card deck of cards of the most wanted Iraqi leaders by the United States government (Starr, 2003). This strategy follows Warden's five-ring model for targeting the enemy as a system. In Warden's model, the most critical center ring is command and leadership (Warden, 1995).

This military option is consistent with the open source political science viewpoint which favors use of force against existing terrorists. In short, committed individuals or

7

organizations should be killed, isolated, or incarcerated (Atran, 2004: 86). The focal point for these committed entities is the leadership.

With lifetimes of radical Islamic teaching leading to a deeply anti-western agenda, the beliefs and policies of the terrorist leadership may be irreversible. Haddad and Khashan describe a long series of events in the history of radical Islam which lead to their leaders' belief in the prominence of Jihad (Haddad and Khashan, 2002: 818). Specific to Al Qaida are the teachings of Sayyid Qutb, one of the two 'intellectual fathers' of the modern Islamic fundamentalist movement (Zimmerman, 2004: 222). An Egyptian writer, executed by the Egyptian government in 1966, his writings provided three functions for the current radical Islam movement. First, he provided an intellectual justification for extreme anti-western sentiment. Second, he provided justification for establishing an Islamic society based on Islamic law. Third, Qutb provided justification for overthrow of all world governments by means of a worldwide holy war (Zimmerman, 2004: 223). Osama Bin Laden, Al Qaida's leader, studied under Mohammed Qutb, Sayyid's brother. Bin Laden's second in command's, Ayman Al-Zawahiri, uncle was a student of Qutb (Zimmerman, 2004: 240-1).

While combating the terrorist leaders directly seems to be a desirable strategy, it could have minimal or even adverse effects. In the case of Al Qaida, the decentralized structure of their organization lends itself to effective operation in the absence of centralized leadership. Further, if trained properly, the lieutenants of the organization may be capable and motivated to ascend to leadership positions. Following the death and capture of many of Al Qaida's top leaders, Atran points out that the transnational Jihadist

fraternity became more difficult to track and fight than it originally was (Atran, 2004: 67). A similar opinion is that in the absence of leadership and sanctuary, Al Qaida has transformed itself into more of an idea or concept than a physical organization (Hoffman, 2004: 552). Finally, killing or incarcerating the terrorist leaders risks the potential for martyrdom, leading to even more devoted followers. Perhaps the most effective strategy with regard to leadership is to isolate, marginalize or discredit them. These tactics degrade the leaders' ability to provide orders, instruction, and motivation while avoided the potential martyrdom from death or incarceration.

2.3. Followers

Similar to strategies targeting their leadership, a campaign of elimination and incarceration of the actual terrorists should be pursued. This strategy serves the dual purpose of directly reducing the number of terrorists while indirectly providing incentive to those at large to abandon the pursuit of terrorist actions. To this end, military actions in Afghanistan, Southeast Asia, and the Horn of Africa demonstrate willingness on the part of the United States and its partners to take whatever measures required to track down, and root out the terrorists (Lindamood, 2002: 11). Continued military pressure in these areas also demonstrates a resolve on the part of the coalition to continue the campaign as long as necessary. The enemy's vision of the Global War on Terrorism is a long-term struggle to diminish resolve, undermine the confidence in American leadership, and erode public support for the effort (Hoffman, 2004: 556). As stated, continued military actions wherever the terrorists decide to base themselves demonstrate American resolve. Terrorist followers, seeing a foe prepared in words and actions for a

long-term campaign, and seeing their comrades progressively eliminated or incarcerated, may be influenced to alter their behavior in order to avoid a similar fate.

Utilizing every capability of the American and international legal system may also serve to provide deterrence to the current terrorists. For example, Malaysia has taken a strict anti-terrorism legal stance to provide the maximum possible deterrent. This legal strategy, coupled with other government actions, has led to a marked decrease in terrorist attacks within their borders. Specifics include an initial 60-day solitary confinement imprisonment without legal representation for suspected terrorists, authority for the police force to arrest with minimal cause, and an allowance for a 2-year detainment without trial (Md Salleh, 2004: 11). While such dramatic measures are unconstitutional in the United States, they demonstrate the potential deterrent effect of applying the most stringent procedures and penalties possible within the law.

2.4. State Support

State support for terrorism can be manifested at several levels. Intimidated governments are those that provide passive support to the terrorist organizations. Examples would be those that do not sign or comply with antiterrorist treaties or those that provide unhindered safe passage. Often, these governments trade their cooperation for an agreement of no violent actions within their territory or on their possessions or people. Their inaction serves to provide indirect support to the terrorists. Ideologically supportive governments support the agenda of the terrorist organization but not necessarily their actions. Similar to the intimidated governments, they may provide verbal support, but their active support is limited. Examples include legal support such as

refusing to extradite known terrorists or failing to arrest known terrorists. Generally facilitative governments take active measures to aid the terrorists. Examples would include providing safe haven, training areas, monetary contributions, and arms. A fourth type of support is direct support of specific incidents. Examples include providing money, training, or arms for a specific attack, or further, including state-specific demands in conjunction with an attack. Finally, the fifth type of support is official participation. Examples include utilizing government organizations such as intelligence, police, or military units to augment the terrorists (Mickolus, 2002: 157).

As mentioned previously, past counterterrorist actions have served to minimize, if not eliminate, the impact of direct support and official participation. Arguably, the most threatening types of supporters today are generally facilitative governments. Afghanistan provides an ideal example of this type of support. Brokered by the Taliban government, the Al Qaida organization received safe haven and arms, while freely running terrorist training camps within the borders of Afghanistan.

Strategies to deter states from providing support range from international awareness, to diplomatic and financial pressure, to forced regime removal. Simply raising awareness in the international community may provide sufficient influence to cause the state in question to cease their support. This awareness may cause the highlighted state to fear losses in economic trade, financial markets, tourism, or exclusion from international organizations. Diplomatic and economic pressure may be exerted through enforcement of a variety of sanctions. Finally, as a last resort, the offending regime can be forcibly removed from power, as with the Taliban in Afghanistan. Similar

to using capture and incarceration of terrorists as a deterrent to at-large terrorists, strict measures and sanctions, or regime removal should act as deterrents to other supporting states to halt their support (NWC Student Task Force, 2002: 46-7).

While important, taking away a terrorist organization's state support or safe haven may not be sufficient to halt their operations. Hoffman argues that losing Afghanistan did little to impact the capability of Al Qaida to launch terrorist attacks, as judged by the level of international terrorist activity since September 11, 2001 (Hoffman, 2004: 551). The dispersed nature of today's transnational terrorist threat, increasingly organized around small cells, reduces, if not eliminates, the need for safe haven. The openness of international borders and technological improvements in communication channels supporting globalization allow relatively simple and secure coordination. Open and unregulated international financial markets aid the terrorists in maintaining liquidity, while reducing the need for material support from state sponsors (Basile, 2004: 169). Further, today's primary terrorist organizations increasingly turn to non-state supporters rather than the traditional state supporters for backing (Mickolus, 2002: 158).

2.5. Intelligence

Accurate intelligence impacts, to some degree, the success of nearly all the other factors. While it is essential to prosecuting the military phase of the War on Terrorism and to identifying actual terrorist plots and strategies, it is also useful in assessing the utility of strategic measures targeted at the long-term elimination of terrorism. In this regard, accurately measuring the impact of public opinion toward the United States, and individual rights and freedoms in identified recruiting countries provides insight toward

12

the impact of political and public diplomacy efforts. Following September 11, 2001, the United States identified improvement of intelligence as an essential ingredient to the War on Terror.

Significant steps have been taken to improve intelligence gathering and sharing within our borders. The future strategy should focus on maintaining and expanding relations with our friends and allies in order to improve information-sharing with their respective intelligence agencies, while continuing to improve our internal, domestic cooperation (Hoffman, 2004: 557). This information-sharing will lead to improved location and tracking of terrorists, identification of terrorist plots in progress and future planning, and more accurate tracing of financial transactions.   Finally, the United States intelligence community should continue to develop its human intelligence capabilities neglected since the end of the Cold War. In his study of Malaysia's handling of the terrorist threat, Md Salleh identified human intelligence, along with intelligence-sharing, as the most critical aspect of their success in reducing terrorist activity (Md Salleh, 2004: 11). Obtaining the desired impact of many of the identified factors in this study will only be possible through the use of human intelligence, since many of them target human attitudes and perceptions.

2.6. Defensive Measures

Examples of defensive measures include target hardening, security measures, emergency response, and enhanced warning. The intent of these measures is twofold. The first goal is to mitigate damage given that an attack will occur. The second is to inhibit access to the target, and if access is attained, neutralize the threat prior to the

attack. Terrorist organizations may be influenced by such measures if they perceive that an attack is either not possible, too risky, or will result in minimal impact relative to the required effort. This strategy seeks to influence the terrorists' cost-benefit decision-making analysis. Paté-Cornell and Guikema developed a rigorous systems analysis approach which seeks to set defensive priorities based on a combination of an assessment of attack likelihood from the perspective of the terrorist and an assessment of the expected damage if an attack does occur from the perspective of the United States (Paté-Cornell and Guikema, 2002: 7). Developing the nation's defensive measure strategies and priorities falls under the responsibility of the Department of Homeland Security. The National Strategy for Combating Terrorism does not incorporate the influence of defensive measures. It is focused purely on identifying and defusing threats before they penetrate our borders (National Strategy, 2003: 2).

2.7. Finances

As with any organization, maintaining operations in the absence of adequate funding is difficult at best. Terrorist organizations incur training, materials, arms, subsistence, administrative and travel expenses, among others, which must be funded. Depriving these organizations of their financial backing would degrade their ability to operate. Following the September 11, 2001 attacks, targeting the terrorist financial infrastructure was one of the first actions taken to inhibit the terrorists' ability to conduct further attacks. While significant assets were frozen, the impact on their overall ability to operate was minimal. Al Qaida's financial network was sufficiently dispersed throughout the world's financial markets to largely avoid seizure. Many of their finances are hidden

in legitimate business, and many are kept in the largely under-regulated Islamic banks. Further, a large percentage of their funding derives from Saudi Arabian charities which are often nothing more than fronts for direct support. In fact, these charities are Al Qaida's top source of financing (Basile, 2004: 179).

Further efforts to interfere in the terrorist organizations' financial networks should focus on assets held outside the United States and its primary allies. The United States should foster further international cooperation in identifying and freezing terrorist groups' assets. Countries with under-regulated financial markets should be encouraged to reform their regulations to better identify illicit funds. The United States should work with the international community to impose directives and oversight for unregulated offshore financial markets. Finally, diplomatic pressure should be exerted on Saudi Arabia and other Middle Eastern nations that allow charity organizations to outflow donations to the terrorist organizations (Basile, 2004: 179). Atran argues that our first line of defense should be encouraging efforts to convince Muslim communities to stop supporting these terrorist-funding charities (Atran, 2004: 84).

The weakness in this strategy, from a short-term perspective, stems from the monetary size and diversity of the terrorist financial network, coupled with Al Qaida's training toward self-sufficiency and frugalness of its operatives (Basile, 2004: 170). Today's terrorist attacks can be planned and executed with relatively small amounts of monetary support. For example, the September 11, 2001 attacks were estimated to be planned and executed on a budget of $500,000 (The Money, undated). It would be extremely difficult to dry up their financial resources to the point of inhibiting such

relatively low-budget operations. Coincidently, an August 2002 United Nations report

concluded that the effort to interdict the Al Qaida financial network had stalled (The

Money, undated). From a long-term perspective, encouraging Muslims to discontinue

financial support in the future may pay dividends. In essence, this strategy would cut off

resources at the source rather than once they're distributed throughout the existing

network.

2.8. Israel/Palestine Policy

With few exceptions, the literature suggests that a primary source of Arab and

Muslim resentment toward the United States stems from our Israeli-Palestinian policy.

Haddad and Khashan's survey of Lebanese-Muslim opinion found that 90 percent of

respondents cited support for Israel as the primary source of resentment toward America

(Haddad and Khashan, 2002: 821). Further, one of bin Laden's three pillars justifying an

offensive global war against the United States and the West is support for Israel

(Sageman, 2004: 19).

This resentment towards the United States' policy dates to the formation of Israel

following World War II, but accelerated and grew following the 1967 Arab-Israeli

conflict and the resulting United Nations resolutions to which Israel did not comply.

Following the Six-Day War, United Nations Security Council Resolution 242 was

enacted which called for the withdrawal of Israeli armed forces from the territories they

occupied during the conflict. This withdrawal was to be in exchange for an end to the

conflict. Specifically, these territories included the West Bank, East Jerusalem, Gaza

Strip, Sinai Peninsula, and the Golan Heights. Since 1967, Israel has reached agreements

with Egypt and Jordan over the Sinai Peninsula and the West Bank, respectively.

However, the Golan Heights are still contested with Syria, while the Gaza Strip, West

Bank, and East Jerusalem are still contested with the Palestinians. The dispute with Syria

deals with the placement of the border between the two countries and focuses on the Sea

of Galilee and the high ground to the north and east of the Sea. The dispute with the

Palestinians deals with their desire for a Palestinian state encompassing the Gaza Strip,

the West Bank, an unhindered connection between the two, and East Jerusalem as their

capital.

Currently, Israel maintains settlements within, and controls access to both the

Gaza Strip and the West Bank. While withdrawals are proposed for this summer, this

remains a contentious issue. In addition, since 1980, Israel has claimed a united East and

West Jerusalem as their capital (East Jerusalem, undated). One of Israel's stated criteria

for withdrawal from the Gaza Strip and the West Bank is the cessation of terrorist

activities (UN Security Council Resolution 242, undated). Coupled with Israel's nearly

40 years of entrenchment in the West Bank, and the Palestinian's use of terrorism as a

direct consequence of the occupation, the current state of affairs presents a complicated

political dilemma.

Since the end of World War II, the United States has aligned itself with Israel in

both perceptions and actions. The array of reasons for this alliance is beyond the scope

of this study, but tends to span a variety of national security and political issues. Arab

negative perceptions derive from a seemingly Israeli hard-line approach toward the

Palestinians funded and supplied by the United States. Further, they point to our record

of vetoing every United Nations attempt to involve the international community (Meyer, 2003: 65). Finally, they compare the Israeli non-compliance with United Nations Security Council Resolutions to Iraqi non-compliance, and the United States' response to both cases (Meyer, 2003: 55). In a piece published by Al Jazeerah, Khan described a three-pronged approach to reaching a resolution. While the approach depended on both Israeli and Palestinian compassion for the plight of their respective adversary, the primary burden was placed on the United States. His argument was that, as the only nation with the power to influence both sides of the dilemma, the United States should practice a more sincere, evenhanded approach to the problem. While the United States bases much of its support on the past treatment and persecution of the Jewish people, Khan states it should also realize that the Palestinian people are now in a similar situation (Khan, 2003: 3).

Given the religious differences and deep-rooted resentments among the governments of the region, facilitating a solution to the territorial disputes and creating a lasting peace may be challenges beyond the scope of America's, or any nation's, influence in the region. However, demonstrating a concerted and balanced effort to solve the Palestinian-Israeli conflict should serve to improve Middle Eastern stability while improving Muslim attitudes toward the United States (Hoffman, 2004: 557). Accomplishing this goal in light of prior commitments and internal political pressures will require a great deal of statesmanship on the part of the United States.

2.9. Iraq Policy

As previously stated, the literature suggests that the United States' treatment of the Palestinian-Israeli conflict is a primary source of resentment among Arabs and Muslims. The literature further suggests our Iraqi policy as a primary source of resentment. Haddad and Khashan's survey of Lebanese-Muslim opinion found that 30 percent of those polled stated disaffection with United States' sanctions against Iraq following the 1991 Gulf War as a source of resentment (Haddad and Khashan, 2002: 820). Similar to support for Israel, one of bin Laden's three pillars justifying an offensive global war against the United States and the West was the death of Iraqi children as a result of sanctions (Sageman, 2004: 19). This disapproval of our Iraqi policy clearly manifested itself in Al Qaida recruitment, which increased in 30 to 40 countries immediately following the buildup of American troops in preparation for Operation Iraqi Freedom (Lynch, 2002: 3).

With regards to Arab resentment of Iraqi policy, many of the roots are in the past and beyond our control at this point. Meyer pointed to several factors he developed from numerous years of living and working in the region, which contributed to the resentment. First, sanctions following the 1991 Gulf War served to only hurt the Iraqi people while Saddam Hussein continued to live a lavish lifestyle. They feel that if the United States wanted him out of power, they could have acted long ago instead of making the Iraqi people suffer through more than a decade of sanctions. Second, Arabs were confused over our policy reversal with respect to Saddam Hussein. The United States aligned itself with Iraq during the Iraq-Iran war, providing aid and support to the regime. At the time,

the regime was equally repressive as it was post-1991. Prior to 1991, Baghdad was a vibrant city, albeit under repressive rule, but following the Gulf War and imposed sanctions it declined to a subsistence society. Third, Arabs question our targeting of the regime due to its oppressive and un-democratic nature when they see similar governments in the region supported by the United States. Fourth, Arabs compare our treatment of Iraq with our treatment of Israel. They see the United States as systematically destroying the Iraqi military based in part on non-compliance with United Nations Security Council Resolutions, while pointing to United States military and political support for Israel who they feel is in violation of Security Council Resolutions. Arabs further point to our condemnation of Iraqi weapons of mass destruction programs while perceiving that we allow Israel to continue such programs uncontested (Meyer, 2003: 47-9).

The United States cannot change these past actions in order to change perceptions. At this point, our objective should be to continue the pursuit of the goals of stability and democracy in Iraq; and once achieved, minimize or eliminate our presence in the country. In keeping with this goal, the United States must also be careful to not allow insurgent terrorist activities within Iraq to influence our strategy.

One viewpoint of the origins of radical Islamic terrorism points to the failed American policy and presence in Lebanon (Pintak, 2004: 3). It was here that the Shi'i Hizbullah introduced the concept of martyrdom in combating the American presence. In September of 1983, suicide bombers attacked both the United States Marine Headquarters and the French contingent of the United Nations multinational force in

Beirut. The bombings rapidly led to the withdrawal of both American and French troops from the Lebanese capital and displayed to the perpetrators the influential possibilities of such terrorist activities (Haddad and Khashan, 2002: 813). The United States must demonstrate resolve and the inability to be influenced by such actions. Similar to our presence on the Arabian Peninsula, our presence in Iraq may be seen as an encroachment on sacred lands. The creation of a successful Iraq, coupled with a willingness to withdraw once the job is complete, should serve to reverse much of the discontent.

2.10. Military Presence

The Arab population is a very proud and insightful people that do not easily forget events of the past. Resentment to western military presence in the region dates back to the Crusades (1095 to 1271), and is more recently manifested in the European colonization in the 19th and 20th centuries (Haddad and Khashan, 2002: 817). Specific to the United States, the Arab world has now seen 15 years of continuous military involvement in the region dating to the beginning of Operation Desert Shield. To many Arabs, this military presence indicates an inability to defend themselves and a dependence on the United States.

Further, this presence is seen by many Muslims as an encroachment by foreign infidels on sacred Muslim holy lands. This encroachment became the focal point of bin Laden's 1996 fatwa initializing a defensive war against the United States where he implored Jihadists to expel "Americans Occupying the Land of the Two Holy Places" (Sageman, 2004: 45). Specifically, these two Holy Places refer to Mecca and Medina, both located in Saudi Arabia (Meyer, 2003: 44). This same justification, along with

support for Israel, and Iraqi sanctions, was used in his 1998 fatwa declaring an offensive

war against the United States and the west in general (Sageman, 2004: 19).

Finally, Arabs resent, and the terrorists exploit, the appearance of the United

States supporting despotic and repressive governments through our basing of military

forces. The ordinary populations of these countries feel trapped by governments that fail

to provide economic prosperity, education opportunities, and disallow democratic say in

governance (Pollack, 2003: 3). Seeing United States military presence and cooperation

with these very governments diminishes our public support while enhancing that of the

terrorists. At the same time, it improves the terrorists' chances to successfully recruit.

2.11. Information Operations/Public Diplomacy

The majority of literature reviewed suggests that the public diplomacy efforts and

capabilities of the United States have declined since the end of the Cold War and have

contributed, mainly through their absence, to declining Arab and Muslim public support.

Recently opened media and press avenues have been exploited by foreign, antagonistic

outlets for their own agenda while being neglected by any substantial American efforts.

Contributing to the top source of Arab resentment, outlets such as Al Jazeera continually

paint the United States as an Israeli-supporting entity. For instance, a 2002 meeting

between President Bush and Ariel Sharon was aired in conjunction with Israeli bombing

of Palestinians (Pintak, 2004: 13). Whether the purpose is simply sensational reporting in

search of ratings or a calculated campaign to undermine American support, elements of

the media have a significant negative impact in shaping Muslim opinion of the United

States.

22

Public diplomacy efforts should focus on two areas. First, the United States should work with outlets such as Al Jazeera, rather than antagonizing them. The goal should be to have them publish and air accurate, unbiased information regarding United States policy. While some may continue to disagree, many of those that currently critique the United States based on false or biased information may change their position if presented with accurate facts (Satloff, 2004: xiv). The United States should lobby the Arab and Muslim people, governments, and press to reform their media to encourage inquisitive, accurate reporting and critical analysis versus their current trend toward jaded, instigating coverage (Haddad and Khashan, 2002: 825). Second, we should seek to improve our own direct communication with the Muslim world in an attempt to portray a more positive image. If done properly, the extremist Islamist messages of radicalism and hate can be successfully countered (Hoffman, 2004: 556). An example would be to directly counter the negative perceptions of our Israeli policy.

Currently, in the absence of an organized American public diplomacy campaign, the Arab world perceptions are primarily influenced by the aforementioned biased, inaccurate reporting. These negative perceptions could be altered in the presence of an accurate and forthright explanation of the American viewpoint and rationale for our policies. The United States Advisory Commission on Public Diplomacy lobbies for the importance of such initiatives and coordinates their implementation. They emphasize the importance of coordinated communication from the United States government to the world. Currently, messages emanate from the White House, Department of Defense, State Department, Congress, and other government agencies. In the absence of

coordination, these messages fail to achieve potential synergistic effects, and worse, are often inconsistent and contradictory (Evers, 2004). The Defense Science Board Task Force on Strategic Communication reached parallel conclusions in their October, 2004 report (Report, 2004). They recommend sweeping changes to the United States' strategic communications organizational structure, policies, strategies, and methods (Report, 2004: 6-9) designed to reverse the accelerating trend toward disapproval of United States' policies (Report, 2004: 46).

2.12. Education

A common misconception is that terrorists are typically uneducated, and that terrorist organizations thrive on recruiting from uneducated populations. In fact, this is not the case. Atran argues that targeting education, along with poverty and social estrangement, will yield little benefit in combating terrorism (Atran, 2004: 74). Haddad and Khashan further argue that education, along with income, are not important determinants in identifying supporters of terrorism (Haddad and Khashan, 2002: 814). Testas conducted a regression analysis of terrorist incidents in 37 Muslim countries from 1968 to 1991 and found that educational attainment was a significant positive indicator variable. In layman's terms, he found that higher education levels led to more terrorist attacks (Testas, 2004: 253). This finding is consistent with the attacks of 11 September 2001 which were conducted largely by educated terrorists (Causes of 9/11, undated).

If lack of education is not a contributing factor to terrorism, possibly the type of education is. In less-developed areas of the Middle East, education is often provided by Islamic schools in lieu of non-existent state-funded schools. For example, Yemen is only

able to provide basic education for 59 percent of its children (Al-Maitami, undated). By setting up their own schools, the Islamists are able to provide education slanted toward their agenda while at the same time garnering public support due to their investment in the community. This long-term strategy helps to provide the terrorists with a potential supply of recruits, as well as a potential supply of donors and sympathy. With greater funding, the United States and her allies could pursue a similar strategy of using education to positively impact the hearts and minds of the average Middle Eastern youth (Satloff, 2004: 66).

Based on his experiences living in Morocco, Satloff observed that private education in the local American school was reserved for the wealthy upper class because of the high tuition cost, $11,000, and lack of American government funding. Due in part to the cost, the school did not operate at its maximum capacity. With an additional $200,000 of external funding, the school could reduce the tuition for the unfilled slots by fifty percent, opening up opportunities for middle class students to attend (Satloff, 2004: 42). Satloff further noted that the total annual funding from the United States to schools abroad is only eight million dollars of the schools' $450 million budget (Satloff, 2004: 42). To put this in perspective, the United States currently spends approximately eight million dollars per hour in Iraq (The War in Iraq Costs, 2005). This example provides further support for the potential effectiveness of funding, at relatively little cost, American education initiatives abroad in an effort to counteract Islamic education and win support from the Middle Eastern populace.

Related to education is the widespread illiteracy in some segments of the Middle East. In the mid-1990s, illiteracy rates for individuals over 15 years of age in Yemen, Egypt, Saudi Arabia, and Syria were 38, 51, 63, and 71 percent, respectively (Middle East, undated). Being illiterate makes these populations more susceptible to Islamic rhetoric since they are unable to read and form opinions on their own.

In addition to literacy in their native language, implementation or expansion of English language education opportunities abroad would serve two potential goals. First, English language knowledge is a gateway to understanding American culture, values, and foreign policy, through both the media and the internet. Second, English language courseware indirectly teaches students this same agenda (Satloff, 2004: 9).

The first goal should be to support basic, native literacy in these neglected regions. With this achieved, English language training programs should be pursued. With an ability to read, or, further, to read and speak the English language, residents of failed countries at least have the opportunity to learn and form their own opinions regarding America, independent from biased translation or incorrect reporting (Satloff, 2004: 65).

2.13. Poverty

Similar to education, the literature suggests that terrorists themselves are not necessarily poor, but poverty in their home countries increases the likelihood of individuals turning to terrorism. Atran argues that a war on poverty will yield little benefit in combating terrorism, and instead argues that terrorism is more closely correlated with a lack of civil liberties and extreme political repression (Atran, 2004, 74).

A counterargument could be made that poverty is a by-product of repression, and that taking actions directed at poverty could serve to garner public support.

A series of events has lead to severe economic difficulty in the Middle East, Southeast Asia, and Africa; prime breeding, training, and harboring grounds for today's terrorist organizations. Haddad and Khashan identified the oil glut of the 1980s, the loss of Soviet economic assistance, and increasing foreign debt as factors leading to the economic failure (Haddad and Khashan, 2002: 814). Due to this fiscal failure, approximately 25 million Arabs are currently unemployed, with this number expected to rise to 100 million by 2020 (Unemployment, 2005). Even this number potentially understates the problem. For example, the unemployment rate in Egypt is currently 9.9 percent, but due to lack of adequately paying jobs, 16.7 percent of Egyptians live below the poverty line (Egypt, undated). Especially depressed are the African nations that received aid in return for Cold War allegiance, such as Somalia, Liberia, and Sierra Leone, which have failed with the loss of Cold War economic support (Beinart, 1995).

To quantify the impact of improved economic conditions, Li and Schaub conducted a regression analysis with transnational terrorist incidents as the dependent variable and percentage of Gross Domestic Product (GDP) increase per capita as an explanatory variable. They found that a one percent increase in a country's GDP per capita decreased the number of transnational terrorist incidents within the country by 19.3 percent (Li and Schaub, 2004: 248). They argue that global economic openness will help improve the target country's financial situation, directly improving the chances of reducing transnational terrorism. They further argue that aid to these countries is

27

required since their economic troubles contribute to their inability to combat terrorism within their borders or stop the terrorist organizations from using their territory for safe haven and training (Li and Schaub, 2004: 236). Finally, well-monitored economic aid in these depressed countries could be a potential factor in furthering our public diplomacy objectives. We may not be able to significantly improve the situation, but the perception of our willingness to help should bolster our public support (Meyer, 2003: 74).

2.14. Repressive Regimes/Democracy

Testas' terrorist regression analysis, introduced in the Education section, also considered political repression as an explanatory variable. He found that, similar to education attainment, political repression was a positive indicator of the number of terrorist incidents (Testas, 2004: 253). Over 50 years ago, in his seminal work on mass movements, first published in 1951, Hoffer wrote that despite the role and influence of the leader, he cannot create the conditions which make a mass movement's rise possible (Hoffer, 1963: 116). Further he explained that "one of the most potent attractors of a mass movement is its offering of a substitute for individual hope" (Hoffer, 1963: 15). The majority of the current literature on the subject points toward the same theme. Individuals, regardless of income level, literacy, or education, unable to further themselves or contribute significantly to society due to repressive regimes and lack of civil liberties often turn to terrorist organizations to fulfill their need for belonging. Terrorist leaders give these individuals something to strive for and excel at that their parent country or government fails to provide. They are able to substitute the goals of the organization for the hopes of the individual.

Our strategy should target these underlying circumstances that lead to feelings of hopelessness and despair. If this hope is restored, one of the terrorist organizations primary recruitment avenues will be degraded. Atran summarized this point succinctly, explaining that the combination of rising aspirations and dwindling expectations is a critical component in generating support for terrorist organizations (Atran, 2004: 67). As a case in point, Egypt, which provides a significant terrorist recruitment supply, has had an output of university graduates far exceeding the capability of the government or economy to provide suitable jobs. Often, graduates were forced to wait years before being given a government job commensurate with their qualifications (Education, 1997). Similar conditions exist in other countries in the region, where attainment of economic and political positions is determined more by a familial caste system than by personal achievement. Essentially, there is an impenetrable glass ceiling for those not of the required genealogical line. Coupled with a relatively insignificant say in government matters, these conditions provide the optimum environment for disenfranchised individuals to turn to terrorism as their perceived only option.

Developing a strategy to deal with repressive regimes proves to be challenging at best. When possible, democracy should be promoted and supported. Windsor detailed several benefits of democracy in counteracting recruitment of extremists. Her eight channels for democratic improvement included: 1) Elections provide the public an opportunity to peacefully change governmental policies, 2) Elected legislatures and independent media permit dissent and encourage political discussion, 3) Elected leaders are accountable to both the people and the law, 4) Populations able to influence change in

their own country are less likely to pursue change in other countries, 5) Democracy, coupled with an independent media, encourages free information flow, 6) Countries are better run since their governments are legitimized by free elections, 7) Democratic societies support economic growth and social development, and 8) Democracy is grounded in the ideals of tolerance, compromise and equality (Windsor, 2003: 46). In supporting democracy, we must also bear in mind that the officials we would like to see in power may not always win their respective elections. If the people freely elect a government unwanted from the United States perspective, we must be supportive.

When a country is unwilling to alter their political repression and human rights abuses, we should consider reducing or eliminating our support. This strategy could be potentially troublesome in maintaining coalition alliances in the War on Terrorism. For instance, we maintain as allies, and base our forces, in such repressive countries as Kyrgystan and Uzbekistan (Atran, 2004: 84). Another example, particularly troublesome to Arab citizens, is the American alliance with Saudi Arabia. From their viewpoint, they question our removal of the repressive Iraqi regime, while maintaining and exploiting our partnership with the repressive Saudi regime (Meyer, 2003: 43). This point bolsters Arab resentment toward the United States and potentially improves public support for the terrorist organizations, exactly what we seek to avoid. We should be deliberate in supporting democratic change, but careful not to strain essential alliances or sway public support away from our cause and toward the terrorists. A detailed "cost-benefit" analysis will be required for each applicable country to determine if continued support is worth the negative implications.

2.15. Chapter Summary

The literature supports the chosen method of analyzing the problem with a bidirectional approach. The strategy for combating terrorism must aggressively pursue the current terrorists, organizations, and financing. Of equal or greater importance is a concerted effort to negate the "next generation" of terrorists. This will be best accomplished through a combination of methods designed to improve Arab and Muslim perceptions of the United States, while influencing the terrorist recruiting grounds to remove the conditions that allow individuals to be influenced by and turn to terrorist organizations for personal fulfillment.

3. Methodology

3.1. Model Selection

As introduced in Chapter 1, the second phase of this study was intended to develop a framework for analyzing the interactions and relative importance of each key, identified factor. In order to accomplish this goal, it was first necessary to determine a viable method of analysis, and second to select an appropriate software tool to implement the method.

Since the problem dealt with influencing factors and the desire to impact an eventual decision of resource allocation, the decision analysis tool of influence diagramming was selected as a starting point. Influence diagrams provide a user-friendly, graphical representation of a given decision situation. Influence diagrams are designed to capture all the applicable factors of a given decision situation, and how they relate to one another, at a selected point in time. To portray the elements of the situation, the diagrams depict all pertinent decisions, chance events and consequences (Clemen and Reilly, 2001: 52). Depending on the context of the problem, a potential weakness of the technique is that influence diagrams only portray a decision situation at a single point in time. They do not incorporate temporal situations where decisions sequence upon one another (Clemen and Reilly, 2001: 67).

Related to influence diagrams are Bayesian Networks. Bayesian Networks model a decision situation with nodes and arcs. The nodes represent the situation's random variables, or, in our case, the influential factors. The arcs represent the dependencies between the nodes, which lead to conditional probabilities for the connected sets of nodes

(Haider and Zaidi, 2004: 3). To solve the network, it is necessary to define the entire set of these conditional probabilities. Given a complex decision situation with multiple influencing nodes, accurately defining these conditional probabilities can be both cumbersome and problematic (Haider and Zaidi, 2004: 3).

For instance, the network developed for this study incorporates "state support reduced" (SS) and "finances reduced" (F) nodes that impact a "current terrorist attacks reduced" (CA) node. Using simple binary logic of true and false, there would be four conditional probabilities to assess for this interaction: $P(CA|SS, F)$, $P(CA|SS, \underline{F})$, $P(CA|\underline{SS}, F)$, $P(CA|\underline{SS}, \underline{F})$, where $\underline{SS}$ and $\underline{F}$ represent the respective compliments of SS and F. If the possibilities were expanded to include intermediate steps in addition to the pure true and false options, the set of conditional probabilities would increase. Further, additional influencing parent nodes would have an exponential effect on the number of required conditional probabilities. Reaching consensus among the applicable parent nodes' subject-matter experts on assigning values to this expansive set of probabilities may prove to be difficult if not impossible. In this example, the economic expert responsible for the finances node and the political analyst responsible for the state support node may not be able to agree on the cumulative impact of their respective nodes on reducing terrorist attacks. Like the generic influence diagram, Bayesian Networks also do not have a temporal element (Haider and Zaidi, 2004: 3).

As an alternative to eliciting the full set of conditional probabilities for a problem situation, Rosen and Smith developed the technique they term Influence Net modeling (Rosen and Smith, 1996: 3). This method requires subject-matter expertise to define the

nodes and influence links relative to their respective fields, but does not require specification of the full set of conditional probabilities (Rosen and Smith, 1996: 3). The method utilizes "Causal Strength" (CAST) logic to compute the conditional probabilities given the individual node data (Rosen and Smith, 1996: 4). This logic will be further discussed in Section 3.2. Similar to influence diagramming and Bayesian Networks, Influence Nets do not incorporate a temporal element. If required by the decision situation, temporal, or time-sliced, techniques have been developed to add a temporal element to Influence Nets (Wagenhals and Levis, 1999).

This study was conducted using the Influence Net approach. Defining the full set of conditional probabilities is a potentially prohibitive task for a single analyst, and may be further complicated when soliciting subject-matter expert input. While not as robust as Bayesian Networks, Influence Nets capture the essence of the decision-making landscape with far less input requirements. In today's fast-paced decision-making environment, the Influence Net approach provides the decision-maker a "quick-look" analysis tool to serve as a starting point for discussion and debate, rather than the Bayesian Network approach whose data requirements may cause it to exceed the time constraints of the decision. Of course, if time allows, a more detailed analysis may be warranted.

The analysis model for this study was built using Situational Influence Assessment Module (SIAM) software. This software package was specifically designed by Science Applications International Corporation (SAIC) to solve Influence Nets using CAST logic (Rosen and Smith, 1996: 4). In addition to SIAM, there are other software

applications that might have been used. For a detailed review of alternative Bayesian Network and Influence Net software applications, see Appendix B of Nicholson and Korb's "Bayesian Artificial Intelligence."

3.2. Situational Influence Assessment Module (SIAM)

As discussed previously, the analysis of factors contributing to the capitulation, or cessation to actions, of transnational terrorist organizations is dependent on the input and opinions of experts from a diverse array of specialties including political, economic, psychological, and military, among others. Reconciling this wide array of potential input poses an obviously challenging problem. The inputs may be presented in a variety of formats with varying terminology and logic structures. Latent biases may cause experts to overstate the importance of factors central to their respective fields. Further, achieving consensus among the experts concerning the interrelationships of cross-field factors will be difficult, if not impossible. Accurately assessing the probability of a single factor in isolation is a difficult challenge. Extending to an accurate assessment of joint probabilities of multiple factors may be prohibitive. Unfortunately, this is the environment analysts are faced with in studying the War on Terror.

Within this complex environment, decision-makers require a mechanism to synthesize the data to decipher what factors are most important to properly allocate limited resources. As discussed in the previous section, the Influence Net modeling approach was developed to make such analyses possible (Rosen, 1996: 3). This approach allows computation of the network without the requirement to specify either the conditional probability or joint probability sets.

This research effort utilized the Situational Influence Assessment Module (SIAM) application to model the transnational terrorist organization problem. The software combines a user-friendly graphical interface with the aforementioned CAST logic as its underlying mathematical basis to compute its output (Sands and Hayes, undated: 1). SIAM is capable of providing decision-makers with a quick macro-level depiction of a decision situation. Through the use of sub-models, the software is then able to provide whatever level of detail is desired, or is possible given operational time constraints. As with any model, the more time and information that is available for development, the more comprehensive it can be. The software requires input from subject-matter experts to define their respective nodes and arcs, but does not require collaboration and consensus between these experts concerning their interactions.

The first step in utilizing the SIAM software is to develop the influence net. This net will consist of a series of nodes corresponding to influential factors connected by a series of links. These nodes and links should all exert some degree of influence on the "root" node of the model, whether through a direct or indirect connection (SIAM, 2003: 10). Root nodes identify the results the model was designed to analyze. For the notional model of this study, the root node will be the reduction of transnational terrorist attacks on the United States. Typically, influence nets are built backwards from the root node of interest. The respective terms "parent" and "child" are used to denote nodes that exert influence versus nodes that are influenced (SIAM, 2003: 9). Initial nodes are those that have no parents and thus have user-defined beliefs or probabilities of occurrence (SIAM,

2003: 10). Finally, intermediate nodes are those that connect the initial nodes to the root nodes.

Consider the following illustrative example. An influence net could be designed to analyze the influences responsible for a bull stock market, or increasing stock prices in general. In this case, the root node would be a general statement such as "stock prices will rise." Possible influence or causal nodes would be "interest rates will rise," "corporate earnings will increase," and "inflation will rise". This scenario is depicted in Figure 1. In this case, the three initial nodes directly influence the root node; intermediate nodes are not necessary.
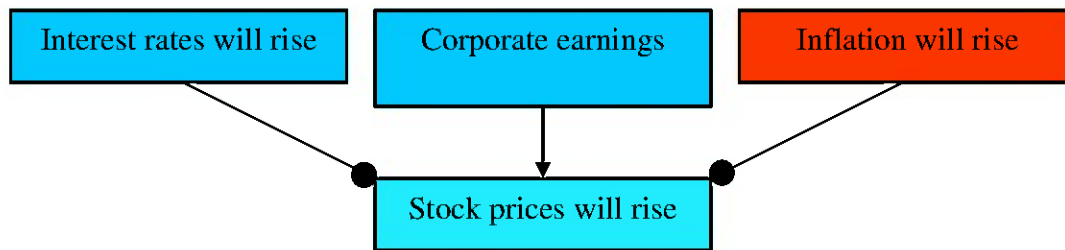
Figure 1: Example SIAM Influence Net

In portraying the influence net, SIAM assigns the colors and types of initial nodes in the display based on the user-defined belief values, or probability of occurrence, for each initial node. The colors and types of intermediate and root nodes are subsequently assigned in conjunction with calculation of the net. The color of each node varies from blue to red based upon the degree of belief that the respective event will occur. For instance, if the user is certain that interest rates will rise, then that particular node will be shaded dark blue. Progressively lighter shades of blue would correspond to lower degrees of belief that the respective event will occur (SIAM, 2003: 13).

37

To enter the degree of belief, each initial node has an associated dialog box with a scale ranging from certainty of false for the event to certainty of truth for the event, as depicted in Figure 2 (SIAM, 2003: 85). For intermediate nodes, a baseline belief may be input. The baseline belief represents the probability that the event will occur, independent of the other modeled influences (SIAM, 2003: 93).

Figure 2: Example SIAM Node Dialog Box

SIAM's link types correspond to the direction of influence the parent node has on the child node. Referring back to Figure 1, an arrow depicts a reinforcing link; signifying that a true result of the parent reinforces the probability of the child event occurring. A solid dot (versus an arrow) depicts a reversing link; meaning that a true result of the

38

parent inhibits the probability of the child event occurring (SIAM, 2003: 13). Strength data for the respective causal links are input via dialog boxes, similar to the node assignments. Figure 3 displays a generic link dialog box. To allow a complete analysis of potential positive and negative impacts within the net, the dialog box provides two scales; one for stating the impact given a true result for the parent, and one for stating the impact given a false result for the parent (SIAM, 2003: 104). With the nodes and links identified, and corresponding beliefs and strengths annotated, the program is able to calculate the impacts of the nodes as a system with resulting beliefs for the root nodes of interest.

Figure 3: Example SIAM Link Dialog Box

The calculations to solve the network are completed using the aforementioned method of CAST logic. The bases for the technique are the individual pairwise cause-effect relationships, or link strengths, depicted in the influence net. The scale inputs in the respective link dialog boxes define the causality and negation probabilities, annotated by probabilities h and g, respectively. To account for the possibility of either a direct or a reversing relationship, h and g can be either positive or negative (Rosen and Smith, 1996: 5). To complete the assessment of the individual pairwise probabilities, each child node may be assigned a baseline probability b that it will occur, regardless of the outcome of the parent.

To combine these probabilities, an individual pairwise conditional probability may be computed using a "four-case" algorithm for the four combinations of positive and negative causality/negation. As an example for positive causality, if X is the child and Y is the parent, then $b_{X|Y} = b_X + h_{X|Y}(1 - b_X)$. In this case, $h_{X|Y}$ is applied to the probability of X beyond the baseline probability, or the complement of the probability that X will occur regardless of Y's outcome (Rosen and Smith, 1996: 7). The four cases are then (Rosen and Smith, 1996: 7):

$$\text{If Y is true:} \quad b_{X|Y} = b_X + h_{X|Y}(1 - b_X); \quad \text{for } h_{X|Y} \geq 0$$

$$b_{X|Y} = b_X - h_{X|Y} * b_X; \quad \text{for } h_{X|Y} < 0$$

$$\text{If Y is false:} \quad b_{X|Y} = b_X + g_{X|Y}(1 - b_X); \quad \text{for } g_{X|Y} \geq 0$$

$$b_{X|Y} = b_X - g_{X|Y} * b_X; \quad \text{for } g_{X|Y} < 0$$

The technique is then extended to the case where multiple nodes impact a single child event. As the number of parent nodes increase, the possible combinations of

40

conditioning cases impacting the probability of the child node increases exponentially. For instance, considering nodes that can take on values of either true of false, a child node impacted by six parent nodes would have $2^6 = 64$ potential conditioning cases (Rosen and Smith, 1996: 7). The heart of the CAST logic is in computing these conditional probabilities.

To compute the conditional probabilities, the logic proceeds through a four-step process beginning with the causation (h) and negation (g) probabilities. For each case, the applicable positive and negative causal and negation probabilities are aggregated. These aggregated probabilities are then combined into an overall influence (O) (Rosen and Smith, 1996: 8). The overall influence is applied to the child node's baseline belief to determine the respective conditional probability based on the following rule:

P[child|jth set of parent states] =

$$b_{child} + (1 - b_{child}) * O_j \qquad \text{for } O_j \geq 0$$

$$b_{child} - b_{child} * O_j \qquad \text{for } O_j < 0$$

In the first case, where the overall influence is positive, or reinforcing, the overall influence is multiplied by the remaining probability above the baseline probability and then added to it. In other words, a positive overall influence serves to increase the child node's probability above its baseline probability. In the second case, where the overall influence is negative, or inhibiting, the overall influence is multiplied by the baseline probability and subtracted. In this case, a negative overall influence serves to decrease the child node's probability below its baseline probability.

These pseudo-conditional probabilities are then combined via the law of total probability to compute the estimated probabilities for each respective node using the following equation (Rosen and Smith, 1996: 9):

$$P[child] = \sum_{\text{all cases}} P[child|jth \text{ set of parent states}] * P[jth \text{ set of parent states}]$$

Note the probability was termed an estimated probability. This is due to the method of computing P[jth set of parent states]. The most accurate method of computing P[child] would be to assess the full array of joint probabilities for the respective child's parent nodes. Similar to the conditional probabilities, this task would require consensus among the applicable subject-matter experts. In lieu of completing this assessment, the individual parent events are assumed to be independent, allowing for the simple multiplication of their respective probabilities to calculate the joint probabilities (Rosen and Smith, 1996: 9).

With the conditional probabilities assessed through the CAST logic and the joint probabilities computed by assuming independence, each child probability is computed within SIAM. These calculations propagate from the initial nodes, through the intermediate nodes, and finally to the network's root node.

The above calculations are implemented in SIAM upon the user's request of a "belief evaluation" (SIAM, 2003: 226). Following the belief evaluation, two options are available for analyzing the network; "impact analysis" and sensitivity analysis. These options "identify those nodes with the greatest direct impact on, or the potential for change of, a selected node" (SIAM, 2003: 229). The impact analysis provides a graphical and numeric representation of the relative influencing impact of each respective

42

parent node on the selected child node. Upon selection of an impact analysis, the display

in Figure 4 appears. The output ranks each of the selected node's parents based on their

percentage relative influence. Using the stock market example, corporate earnings were

calculated to account for 67 percent of the relative influence on overall stock prices.

Figure 4: Example SIAM Impact Analysis

The utility of the impact analysis is limited since it is based solely on the user-

selected link strengths, and only looks at the direct parents of the selected node (SIAM,

2003: 234). While informative, the impact analysis should be complemented with a

sensitivity analysis to fully exploit the capabilities of the program.

For this study, the program's "pressure parents analysis" was used to test for

sensitivity at each intermediate node (SIAM, 2003: 235-6). The sensitivity algorithm

varies each potential pressure node over the full range of false to true and graphically

portrays the potential impact on the selected node's belief. The graphical display

presents both a ranking of the pressure nodes based on their potential to change the

selected node's belief, and a representation of the pressure nodes ability to further inhibit

or promote the occurrence of the selected node (SIAM, 2003: 238). Figure 5 displays the

sensitivity analysis for the stock market example. The vertical line corresponds to the

probability of stock prices rising based on the model's current inputs. The bars for each

parent node depict their total potential to change the probability of stock prices rising.

The area to the left of the vertical line corresponds to potential to further inhibit the

occurrence of rising stock prices, while the area to the right of the vertical line

corresponds to potential to further promote the occurrence of rising stock prices.
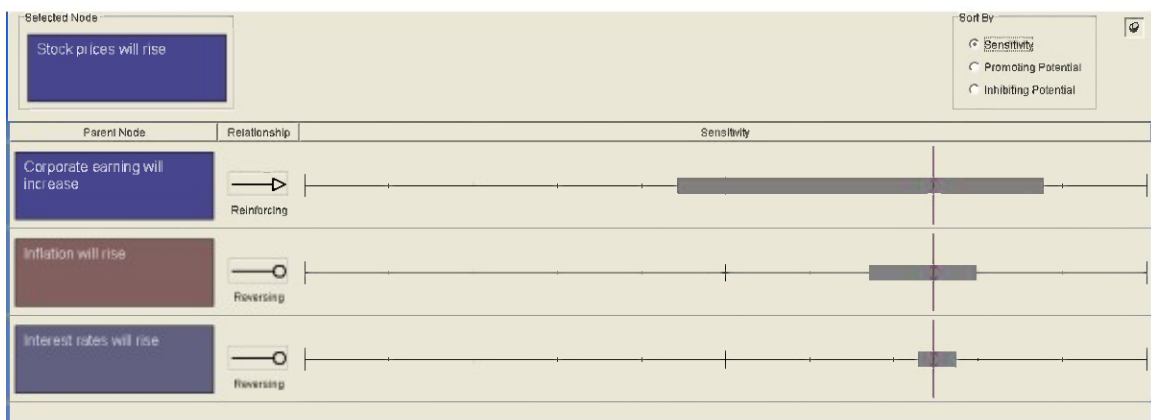
Figure 5: Example SIAM Sensitivity Analysis

This analysis serves the dual purpose of identifying those nodes which require

further research to ensure accurate assessments of influence; and identifying those nodes

that have the greatest chance of influencing the selected node toward the desired

outcome.

As with any modeling application, SIAM has several strengths and weaknesses.

The weaknesses generally focus on the programs necessary simplifications. As

previously mentioned, the program is based on the Influence Net method which is itself a

simplification of a true Bayesian Network. Through the CAST logic, SIAM does not

incorporate actual conditional probabilities in its calculations, only approximations. The

application further assumes independence in calculating the joint probabilities of the nodes. Next, the application appears to utilize continuous scales for both the node beliefs and link strengths. Previous research has determined that both scales are discretized into bins to simplify the calculations. Sands and Hayes found that the node belief values are discretized into nine bins and the link strengths into seven bins (Sands and Hayes, undated: 19-20). Contrary to this finding, actual observation of the software's dialog boxes indicates that both scales use nine evenly-distributed bins, separated into 0.11 intervals, to define the word synopsis for each impact. Viewing the values through the overview format appears to indicate that both the belief values and link strengths are assigned continuous values. Finally, as previously discussed, SIAM does not incorporate a temporal element.

The discussion of weaknesses leads to the application's primary strengths. SIAM's ease of use makes it an attractive decision-making tool. The user-friendly interface, coupled with minimal required inputs make it possible to develop a useable model in a relatively short period of time. Time, requirements, and conditions permitting, the model can be made more or less detailed. Lastly, the program does not require subject-matter expert consensus on either conditional probabilities or joint probabilities; and the respective estimates can be tested with sensitivity analysis.

Given an awareness and appreciation of the impacts of the shortfalls, SIAM is a viable decision-making tool. The eventual decision-maker should be cautioned that the model's output will only be as good as the data input. With minimal inputs required to develop a complete model, relatively small input data errors could easily cause skewed

results. As with any tool, SIAM is not intended to provide an unequivocal solution, only to provide an analysis mechanism to aid decision-makers.

3.3. Transnational Terrorist Organization Influence Net

To develop this study's influence net, each factor was first converted into a statement, for input in the model. For instance, the leadership factor was converted to "Leadership Reduced". When dealing with the factors in the SIAM model, these types of statements are more meaningful when determining the link strength values. Once the thirteen factors from Chapter 2 were translated to such statements, the full set of potential interactions was assessed. Table 1 details this set of notional interactions for the "Leadership Reduced" node, along with the respective notional link strengths. The full set of notional interactions is included as Appendix A.

Table 1: Leadership Influence Net Input Data

Factor	Prob (1-9)	Influences	Influenced by	Impact if True (1-9)	Impact if False (1-9)
Leadership Reduced (Ldrs Reduced)	5	Followers Reduced	Followers Reduced	8	4
		Finances Reduced	Intel Improved	6	5
		Iraq Improved	I/P Improved	6	4
		Mil. Pres. Reduced	Iraq Improved	8	2
		IO/PD Improved	Mil. Pres. Reduced		
		Ed. Improved	IO/PD Improved		
			Ed. Improved		
		Current		7	4
		Future		9	3
		Resentment		7	4

The second column of the table represents the belief value assigned to the node. For the purposes of this notional example, all belief values were left as neutral in order to simplify the model and focus on analyzing the influences.

Six of the thirteen factors were assessed to be influenced by leadership. Conversely, seven factors were assessed to influence leadership. The rationales for these

assessments are described below. These descriptions support the inputs to the notional

example and, further, demonstrate the thought process required of eventual subject-matter

experts using the model. While they are representative of the potential interactions and

factors impacting the respective link strengths, they do not attempt to encompass the full

range of factors the subject-matter experts would identify and quantify.

Followers both influence and are influenced by leadership. On one hand, a

reduction in the leadership factor should serve to reduce the number of followers.

Without the guidance and motivation of leadership, followers may potentially withdraw

from the cause. Alternatively, a reduction in the number of followers should have a

positive impact, from the United States' perspective, in reducing leadership since the pool

of potential replacements for eliminated leaders will be reduced.

The terrorist financial network would be expected to be influenced by a reduction

in leadership. The leaders may exert direct control over the financial accounts or develop

the transfer strategies to avoid international attempts to track and freeze funds. Affluent

leaders may also be direct donors to their organizations. It may also be their charisma

and vision that influences other supporters to donate. A reduction in the leadership factor

would be expected to have a positive impact in reducing the financial reserves of the

organization.

An improvement in the Iraqi situation is expected to both influence and be

influenced by leadership. An improvement in the Iraqi situation would remove one of the

primary contributors to resentment of the United States, having a positive impact in

reducing the leadership factor. Conversely, eliminating or isolating the terrorist

leadership would serve to reduce the insurgency effort in Iraq, directly improving the situation. However, this improvement may be counteracted by the possibility of increased attacks due to the corresponding reduction in command restraints.

A reduction in the United States' military presence in the region would both influence and be influenced by the leadership factor. A marked reduction in terrorist leadership, most notably in Afghanistan, would reduce the requirement for military forces in the region used to track and capture or kill them. Similar to the rationale of the Iraqi situation, a reduction in military presence in the region should influence the terrorist leadership since that is one of their primary grievances with the United States.

Information operations and public diplomacy would both influence and be influenced by leadership. A reduction in terrorist leadership would serve to improve our information operations campaign since they are one of the primary sources of negative rhetoric toward the United States. Conversely, an effective information operations campaign may, though not likely, serve to alter the viewpoint of the leadership in a more positive light toward the United States.

Improved education initiatives may result from a reduction in terrorist leadership or, conversely, influence a reduction in leadership. Reducing leadership would remove one of the driving forces behind the establishment of Islamic schools that teach resentment of America as part of their curriculum. Alternatively, improving Muslim ideological education may, again not likely, serve to impact the terrorist leaders' views toward Jihad and righteousness of terrorism as a strategy.

Reducing terrorist leadership would be expected to be influenced by improvements in our intelligence community. With refined intelligence capabilities, the United States should be better able to locate, track, and neutralize hostile leadership high-value targets.

Finally, measures taken to improve Arab perceptions of the United States' Israeli policies should positively impact a reduction in terrorist leadership. Again, similar to an improved Iraqi situation or a reduced military presence in the region, one of the primary sources of resentment toward the United States would be removed.

Following similar analyses for the remaining twelve factors, the influence net was developed. The full model is shown in Figure 6.

The complete set of factors, with their corresponding linked interactions, forms the semi-circle encompassing the top half of the model. The bottom portion of the model includes the root node and intermediate nodes. In building the model, the foundation was the "Terrorist Attacks Reduced" root node. Directly contributing to the root node were the "Attacks from Current Terrorist Organizations Reduced" and "Attacks from Future Terrorist Organizations Reduced" intermediate nodes. These two nodes represent the current and future generations of terrorists explained in Chapter 2. As depicted, nearly all of the thirteen factors contribute to both the current and future nodes. However, the link strength associated with each may be different. For instance, the leadership factor was modeled to have a greater impact on the future attacks node than the current attacks node. With organizational redundancies established and followers already dedicated to the cause, the impact of a leadership reduction on current attacks was assessed to be lower
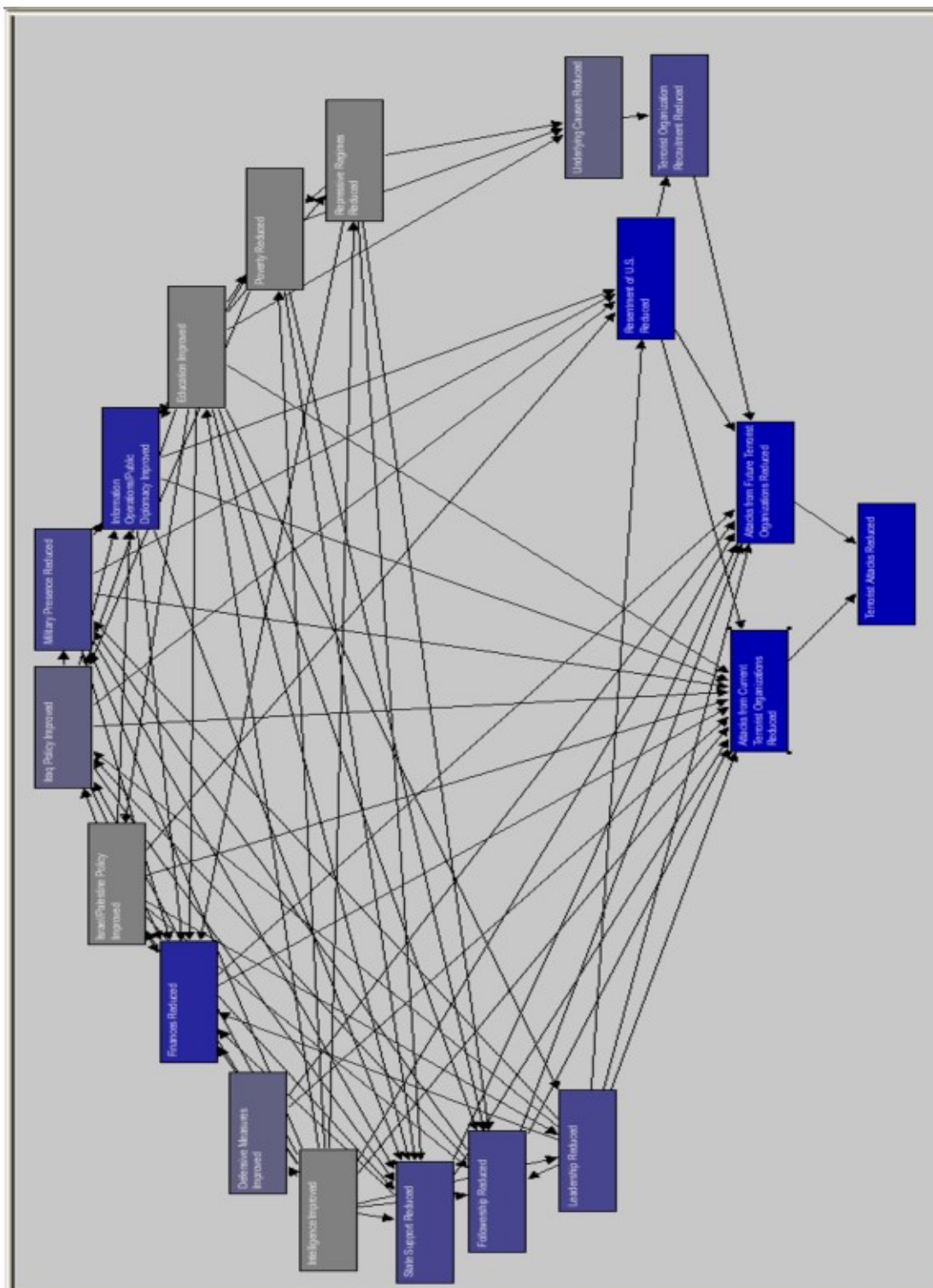
Figure 6: Computed Influence Net

than the impact on future attacks. In the long-term, reducing leadership should have a significant, direct impact on recruitment and financing.

The final three intermediate nodes included in the model were the "Terrorist Organization Recruitment Reduced," "Underlying Causes Reduced," and "Resentment of U.S. Reduced" nodes. These nodes derived from the fact that one of the keys for the terrorist enemy to continue the long-term campaign is recruitment. Additionally, Chapter 2 highlighted the combination of underlying conditions leading to despair and resentment for America as an ideal environment for terrorist recruiting. The resentment node was assessed to influence the current attacks and future attacks nodes as well as the recruitment node. Resentment will be a critical ingredient in motivating both current and future terrorist attacks on the United States; it will also be an influential factor in the terrorist recruiting effort.

Once the nodes and applicable links were built, the link strengths were required to complete the model. As depicted in Table 1 and Appendix A, the link strengths were assigned on a scale of 1 to 9 with 5 interpreted as no impact. A higher value represents a higher likelihood for the child node based on a known result for the parent. As depicted, values are entered for both a true parent statement and a false parent statement. The discrete values from 1 to 9 were specifically chosen to coincide with the nine bins assigned by the SIAM logic.

In inputting the data into the SIAM model, two additional limitations of the software were noted. First, the software will not allow circular logic, or cycles, to occur. A link cannot depart an individual node and eventually, through any path, return to that

node. Such circular paths would create infinite loops in the program's processing, inhibiting the belief evaluation (SIAM, 2003: 99). From the full set of interactions found in Appendix A, those in italics were not included due to cycles, reducing the overall fidelity of the model. In determining which interactions to remove, those determined to be the least influential were not included. A second limitation of the software was realized when the inputs to the "Attacks from Current Terrorist Organizations" node were made. The software will allow a maximum of twelve parent nodes for any given child node. Due to this limitation, influence links from "Poverty Reduced", and "Repressive Regimes Reduced" to the current attacks node were not included. This limitation should have minimal impact since these factors have primarily long-term effects.

3.4. Chapter Summary

Due to the nature of the problem, the influence diagramming approach was used as a framework to model the relative impact upon transnational terrorist organizations of the 13 factors identified in Chapter 2. This approach was refined to the use of an Influence Net, a simplification of Bayesian Networks. The SIAM software application was used to implement the approach. Using the factors identified in Chapter 2, a notional Influence Net was developed to model the transnational terrorist organization problem. A summary of the notional inputs to the model is included in Appendix A. Chapter 4 will describe the sensitivity analysis of the notional model with the intent of identifying which of the 13 factors have the greatest chance of reducing transnational terrorist attacks against the United States.

4. Results

4.1. Sensitivity Analysis

The analysis of the notional model began with a simple ranking of the factors based on the number of other factors influenced. From the data in Appendix A, the number of factors influenced before and after considering cycles for each respective factor were summed and ranked. The results are displayed in Table 2. While a rudimentary measure, this initial analysis is insightful in identifying potential trends. First, the ranking suggests a strategy contrary to a typical anti-terrorism strategy targeting the actual terrorists, state supporters, and finances. In fact, these factors are all near the bottom of the list. The ranking further suggests a strategy weighted towards factors influencing the long-term War on Terror, and more specifically, resentment toward the United States and the underlying factors leading to terrorist recruitment.

Table 2: Factor Influence Rankings

Rank	Factor	# Cycles	Cycles	Total
1	Intel Improved	11	12	23
2	Education Improved	9	9	18
3	Israel Policy Improved	6	6	12
4	Rep. Reg. Reduced	4	7	11
5	IO/Public Dip. Improved	2	9	11
6	Leadership Reduced	4	6	10
7	Iraq Policy Improved	4	6	10
8	Mil. Presence Reduced	3	7	10
9	Poverty Reduced	4	5	9
10	State Sprt Reduced	1	5	6
11	Followers Reduced	2	3	5
12	Finances Reduced	0	2	2
13	Def. Measures Improved	0	0	0

With the notional link strength values from Appendix A incorporated, the model was run and a complete sensitivity analysis conducted. First, impact analyses were completed for the root node and the five intermediate nodes. Recall that the impact

analysis only looks at the direct parents of the selected node and their respective user-selected link strengths. Following these impact analyses, pressure parent sensitivity analyses were conducted for each of the intermediate nodes to analyze the relative potential of their respective parents to change the intermediate nodes' probability of occurrence.

The impact analysis for the total attacks root node, shown in Figure 7, resulted in an even distribution between the relative impact of reducing current attacks and future attacks. This result was expected and served to emphasize the limitations of the impact analysis. Since the total attacks node only has two parent nodes and they both have identical link strength values, the relative impact computed by the impact analysis was, as expected, equivalent.
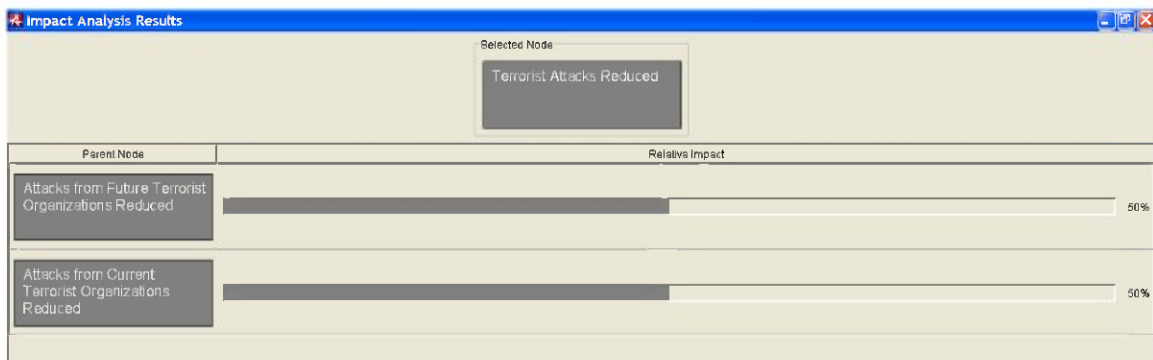
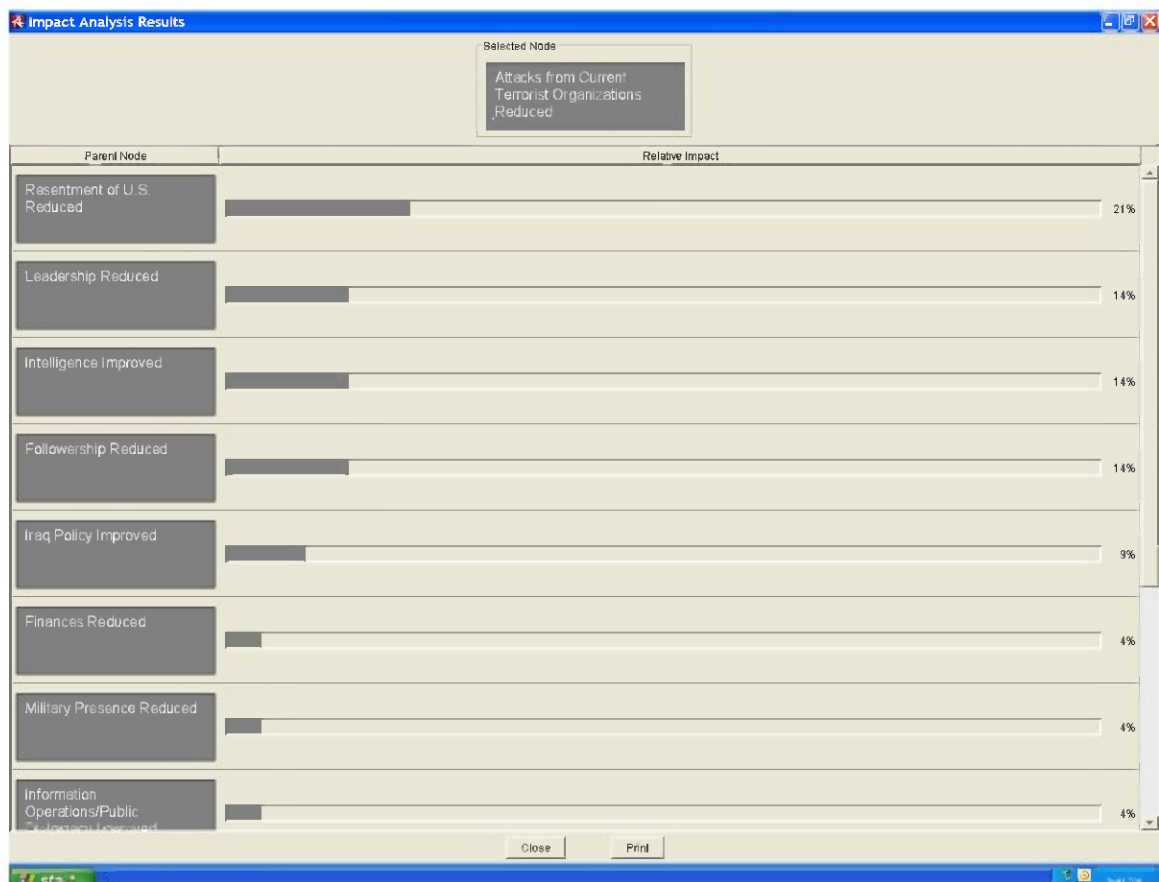**Figure 7: Total Attacks Impact Analysis**

Next, impact analyses were conducted for the five intermediate nodes. These provided more germane results since they began to discern the more influential initial factors from those with minimal impact.

Referencing Figure 8, those factors with the highest relative impact to reducing current terrorist attacks were reducing resentment toward the U.S., reducing leadership,

improving intelligence, and reducing the followers. These four factors account for 63

percent of the total impact. The remaining 37 percent is accounted for by the other 9

assessed parent nodes, based upon the notional values used in this illustrative example.

Not shown in Figure 8 are the relative impact of the state support, defensive measures,

education, finances, military presence, and Israeli/Palestinian policy nodes. Each of these

nodes accounts for four percent of the relative impact. In this particular case, the relative

impacts sum to 100. Dependent upon rounding error, these will not always sum perfectly

to 100 (Sand and Hayes, undated: 7).

Figure 8: Current Attacks Impact Analysis

Of particular note is the top factor of reducing resentment. Referencing the original influence net in Figure 6, the parent nodes to the resentment node are also parent nodes to the current attacks node, creating a cumulative impact. While complicating the model, this arrangement was considered reasonable. For instance, a current terrorist attack may be motivated by a general resentment of America or a direct disagreement with U.S. policy towards Israel. Since Israeli policy is one of the contributing factors to resentment, the cumulative influence is created.

Figure 9 depicts those factors with the highest relative impact on reducing future terrorist attacks. Reducing recruitment is the top factor, accounting for 28 percent of the relative impact. Reducing leadership, reducing followers, and reducing resentment towards the U.S. have similar relative impacts of 18, 18, and 16 percent, respectively. The remaining four nodes (state support, intelligence, finances, and defensive measures) cumulatively account for only 20 percent of the relative impact.
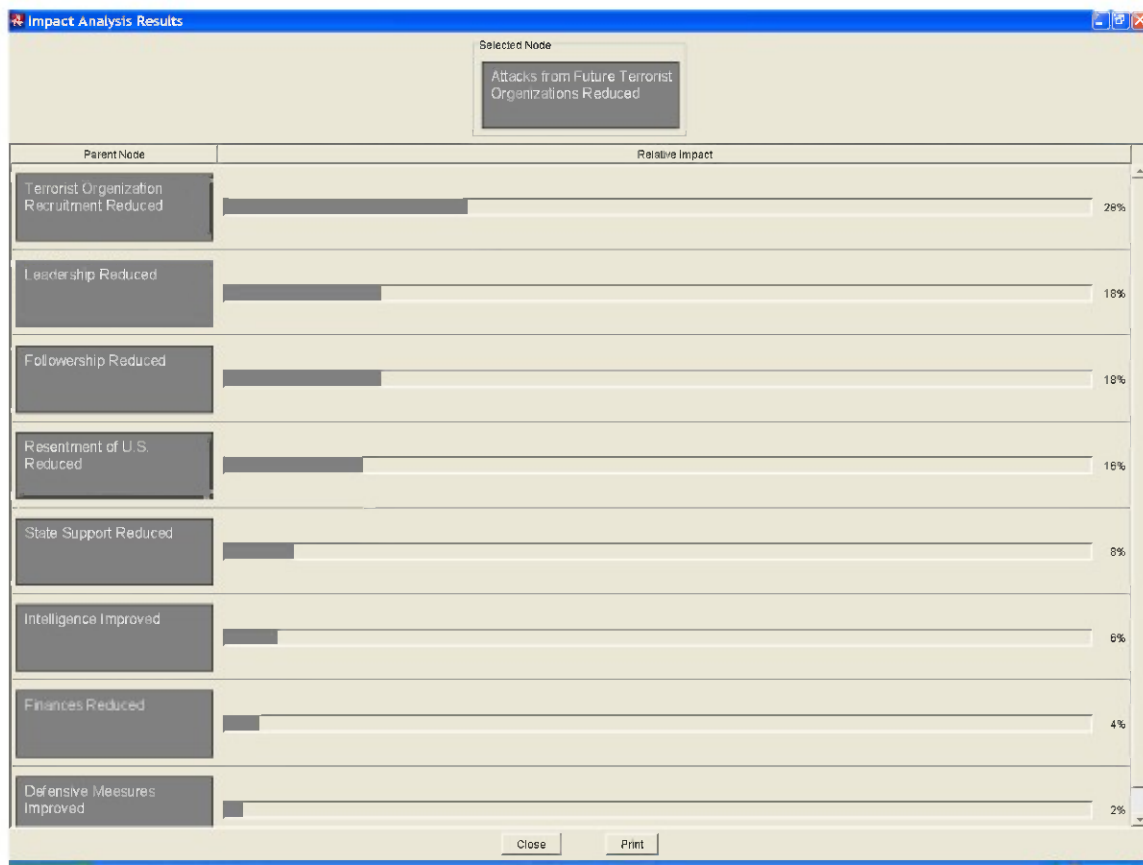
Figure 9: Future Attacks Impact Analysis

Figure 10 compares the relative impact of the two intermediate nodes influencing terrorist organization recruiting; underlying causes and resentment. The comparison clearly shows a greater influence from the underlying causes node, with an 80 percent relative weighting. This would suggest that, with respect to terrorist recruiting, the cumulative impact of the underlying causes' parent nodes (education, poverty, and repressive regimes) is four times as great as that of resentment's parent nodes (Israeli/Palestinian policy, Iraqi policy, military presence, information operations/public diplomacy, and leadership).
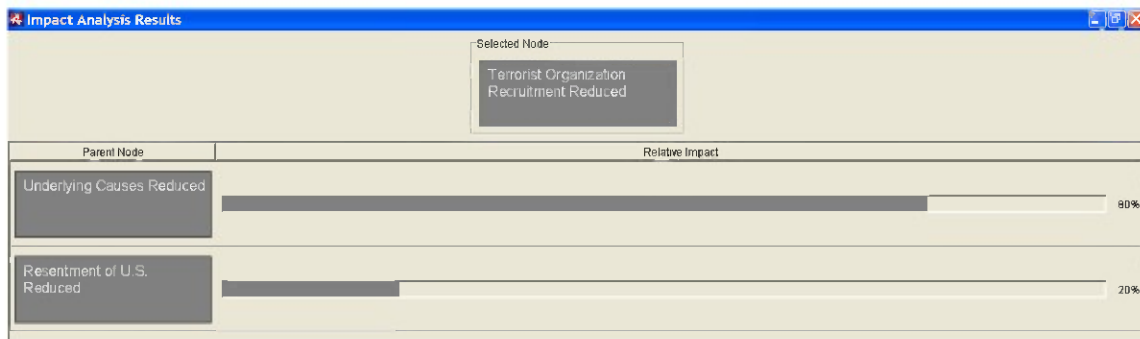
Figure 10: Terrorist Organization Recruitment Impact Analysis

Figures 11 and 12 illustrate the final two impact analyses for the resentment and underlying causes intermediate nodes. For the resentment node, Israeli policy and information operations/public diplomacy indicate the greatest relative impact, accounting for 29 and 28 percent, respectively, compared to 19, 14, and 10 percent for the military presence, Iraq policy, and leadership nodes. For the underlying causes node, the reduction in repressive regimes node is clearly the most influential, with a relative impact of 70 percent versus 15 percent for the poverty and education nodes.
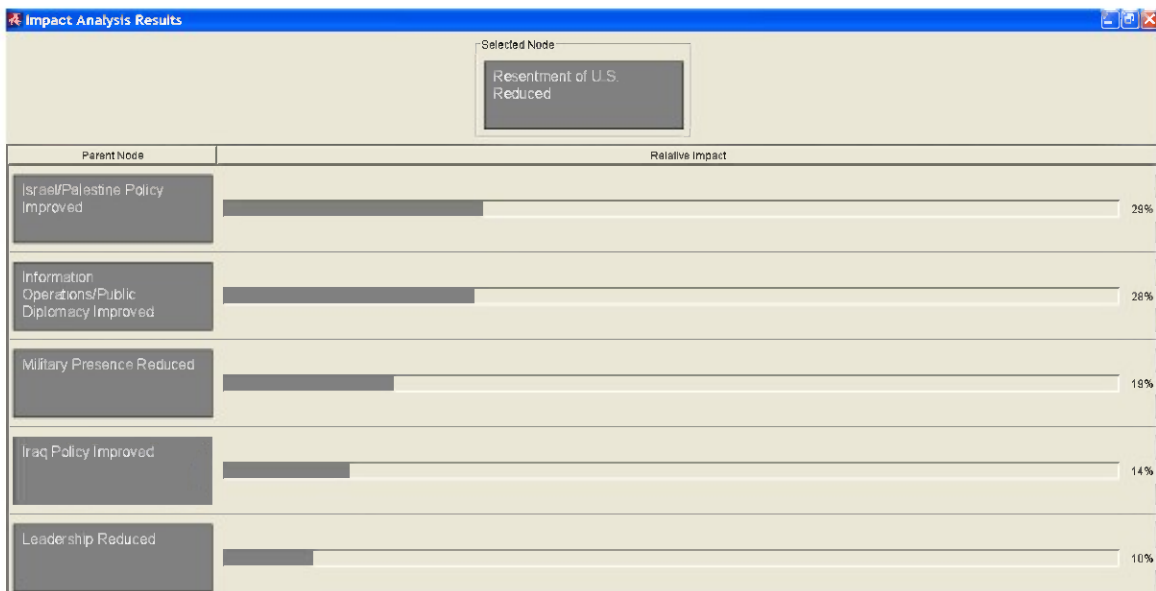
Figure 11: Resentment of U.S. Impact Analysis

Figure 12: Underlying Causes Impact Analysis

Table 3 consolidates the findings of the six impact analyses for the notional

example. The underlined factors of leadership, followers, and intelligence demonstrate

higher influence on both the current and future attack nodes, based upon the impact

analysis outputs' percentage of relative impact. Both leadership and followers are in the

top two of each category (considering ties). Intelligence (20 percent) is distinguished

from state support (12 percent) based upon summation of the two percentage impacts.

The resentment node, in bold, has the most relative impact on the current attacks node

and the fourth highest relative impact on the future attacks node. Column 4 then suggests

that Israeli policy and information operations/public diplomacy have the greatest relative

impact, 29 and 28 percent respectively, on resentment. Finally, recruitment, the top

factor impacting the future attacks node, is most significantly influenced by underlying

causes (80 percent), and correspondingly by repressive regimes at 70 percent (all

annotated in italics).

Table 3: Consolidation of Impact Analysis Rankings for Notional Example

Current Attacks	Future Attacks	Recruitment	Resentment	Underlying Causes
Resentment – 21%	Recruitment – 28%	Under. Causes (80%)	**Israel - 29%**	Rep. Regimes - 70%
Leadership – 14%	Leadership – 18%	Resentment (20%)	**IO/PD - 28%**	Poverty - 15%
Intel – 14%	Followers – 18%		Mil Pres. - 19%	Education - 15%
Followers – 14%	**Resentment – 16%**		Iraq Policy – 14%	
Iraq Policy – 9%	State Sprt – 8%		Leadership – 10%	
Finances – 4%	Intel – 6%			
Mil Pres. – 4%	Finances – 4%			
IO/PD – 4%	Def. Measures – 2%			
Education – 4%				
Def. Measures – 4%				
Israel Policy – 4%				
State Sprt – 4%				

To emphasize the impact analyses dependence on link strengths, Table 4 was

created to consolidate the notional link strength inputs listed in Appendix A. The top row

of the table lists the five intermediate nodes of the notional model. The first column of

the table is an inclusive list of the parent nodes for these five intermediate nodes. Each cell of the table includes the respective parent node's link strengths from Appendix A, link strength "differential," and associated ranking. Using the cell corresponding to the leadership node as a parent to the current attacks node, the "impact if true" link strength (h) is seven; and the "impact if false" link strength (g) is 4. The link strength differential (d) is computed as the cumulative distance from neutral: $d = (h - 5) + (5 - g) = (7 - 5) + (5 - 4) = 3$. This differential ranks in a tie (T) for second among the twelve parent nodes of the current attacks node.

Table 4: Link Strength Differential Rankings for Notional Example

	Current	Future	Resentment	Causes	Recruitment
Leadership	2T) 7/4 - 3	2) 9/3 - 6	5) 7/4 - 3		
Followers	2T) 7/4 - 3	2) 9/3 - 6			
State Support	6T) 6/5 - 1	5) 8/5 - 3			
Intelligence	2T) 7/4 - 3	5) 7/4 - 3			
Def. Measures	6T) 6/5 - 1	8) 6/5 - 1			
Finances	6T) 6/5 - 1	7) 7/5 - 2			
Israel/Pal. Policy	6T) 6/5 - 1		1) 9/3 - 6		
Iraq Policy	5) 6/4 - 2		4) 7/3 - 4		
Mil. Presence	6T) 6/5 - 1		3) 8/3 - 5		
IO/PD	6T) 6/5 - 1		1) 9/3 - 6		
Education	6T) 6/5 - 1			2) 7/4 - 3	
Poverty				2) 7/4 - 3	
Rep. Regimes				1) 9/2 - 7	
Resentment	1) 7/3 - 4	2) 8/2 - 6			2) 7/3 - 4
Causes					1) 9/2 - 7
Recruitment		1) 9/1 - 8			

The rankings of Table 4, with two exceptions, are identical to the relative impact rankings depicted in Figures 8-12 and Table 3. First, SIAM does appear to favor the causal ("impact if true") link strength over the negation ("impact if false") link strength when computing relative impacts. For instance, column 3 of Table 4 indicates a tie between state support and intelligence. However, the impact analysis computed a relative impact of eight percent for state support and six percent for intelligence. The second

exception appears to be the result of rounding error. In column 4 of Table 4, Israeli/Palestinian policy and information operations/public diplomacy have identical link strengths and thus equal differentials. However, the impact analysis computed a relative impact of 29 percent for Israeli/Palestinian policy and 28 percent for information operations/public diplomacy. The impact analyses are, indeed, purely a reflection of the user-defined length strengths and simply translate them to a more intuitive percentage format.

The results of the impact analyses, based on the notional model, suggest that the most influential factors are reduction of repressive regimes, reduction of leadership, reduction of followers, improved Israeli/Palestinian policy, improved intelligence, and improved information operations and public diplomacy. Conversely, the notional model at this point suggests that improving defensive measures, reducing finances, reducing poverty, and improving education are the least influential factors. Again, these results only reflect the direct parent nodes and their associated link strengths.

With the relative impacts computed, sensitivity analyses were conducted on the same five intermediate nodes. As introduced in Chapter 4, sensitivity analysis seeks to identify those nodes with the greatest potential to change the likelihood of the selected event. This is accomplished by analyzing the impact of the respective node at all possible belief values from definitely false to definitely true. Thus, the selected node is impacted by the direct link with the respective parent, and the indirect links between the respective parent and the nodes it impacts that further impact the selected node. In examining the sensitivity analysis graphics, the width of the respective bar corresponds to this potential. The vertical line defines the belief of the selected node under the model's current

conditions. The area of the bar to the left of the line depicts the potential to further inhibit the probability of the selected node's occurrence. The area of the bar to the right of the line depicts the potential to further promote the probability of the selected node's occurrence.

With one exception, improvement in intelligence, the sensitivity analysis of the notional model led to similar conclusions to those already noted by the impact analysis. In the analyses of current attacks and future attacks, improved intelligence was found to have both the greatest potential for change, as indicated by the width of the bar, and the greatest potential to further promote, as indicated by the area of the bar to the right of the vertical line.

Figure 13 depicts the sensitivity analysis for the current attacks node. As stated, intelligence has the greatest potential to further promote a reduction in current terrorist attacks. This result is due to a combination of the assigned link strength between intelligence and current attacks, and, more importantly, the number of nodes (nine) intelligence influences that in turn influence the current attacks node. Further, four of these nodes influence the resentment node which, in turn, influences the current attacks node.
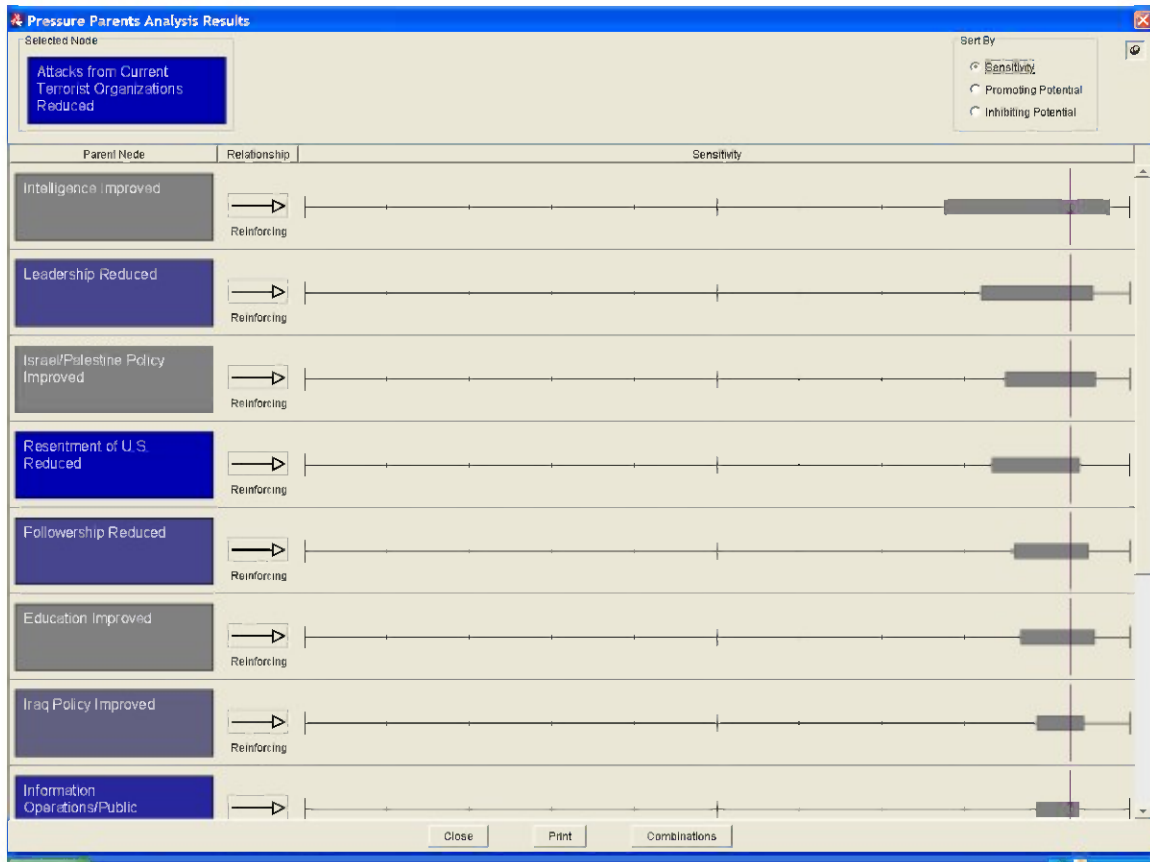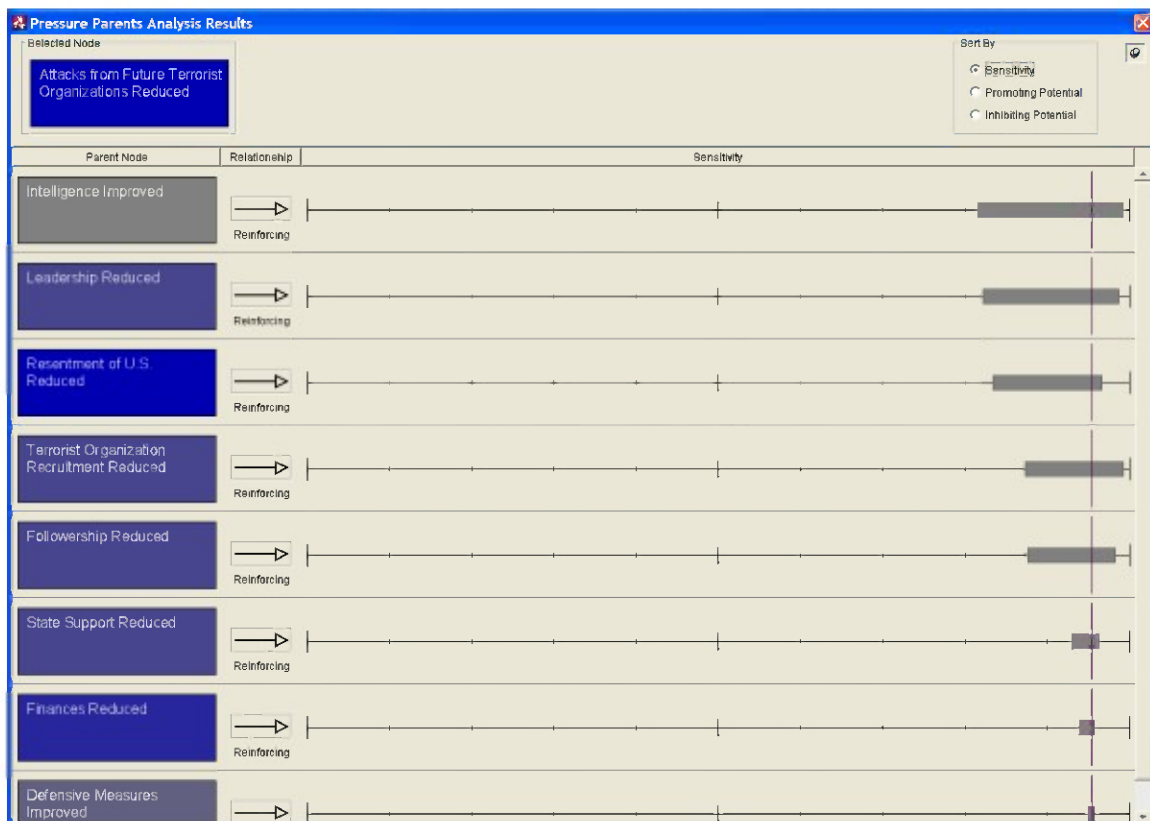
Figure 13: Current Attacks Pressure Parent Analysis

Improvement in Israeli policy has the second highest potential to further promote a reduction in current terrorist attacks.   Similar to the impact analysis, reduction in leadership, reduction in resentment toward the U.S., and reduction in followers all rank high with respect to total potential for change. These potentials all appear to be relatively similar with no obvious differentials between factors. While the model does rank the factors in order of potential to further influence, its output does not provide enough data to test for statistical significance of the differences.

The sensitivity analysis for the future attacks node is displayed in Figure 14. Again, the greatest potential to further promote a reduction in current terrorist attacks is from the intelligence node. As before, this is the result of both the direct and indirect links between the two. Reduction in terrorist recruiting has the second largest potential to further promote. Parallel to the corresponding impact analysis, reducing leadership, reducing resentment toward the U.S., and reducing followers are the other top factors with total potential for change. Again, these potentials are very similar, and upon more in-depth analysis may not be statistically different.

**Figure 14: Future Attacks Pressure Parent Analysis**

Figures 15, 16, and 17 depict the sensitivity analyses for the recruitment, resentment, and underlying causes nodes, respectively. All the findings from these calculations are consistent with the impact analyses.

Figure 15 suggests that underlying causes node has more than double the potential to further inhibit the probability of occurrence of a reduction of terrorist recruitment than the resentment node, as evidenced by the width of the bar segment to the left of the vertical line. More dramatically, the underlying causes node's potential to further promote the probability of occurrence of a reduction of terrorist recruitment is considerable, while the resentment node's similar potential is near zero, as displayed by the width of the bar segment to the right of the vertical line. This result, unlike the sensitivity analysis for the current and future attack nodes, is only a result of the direct links. For this analysis, there are no indirect links to be considered. From Table 4, the link strength differentials for the underlying causes and resentment nodes were seven and four, respectively. Without indirect links, this difference will be directly reflected in the sensitivity analysis of the recruitment node.
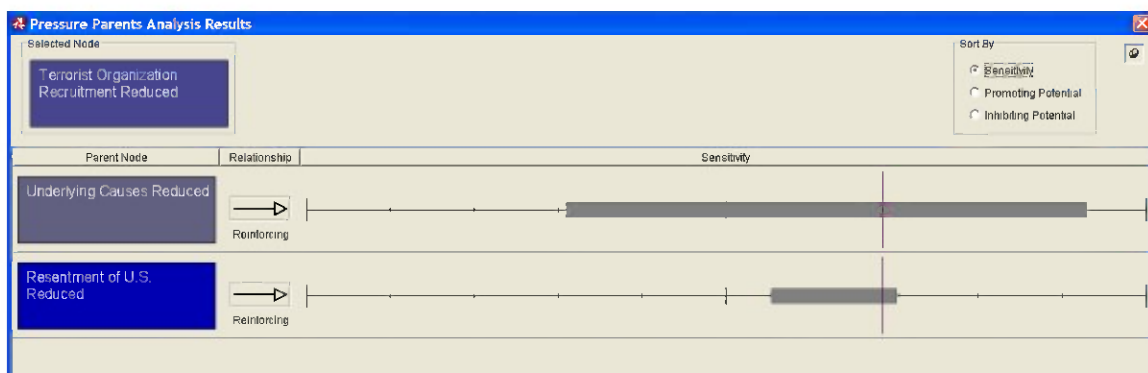

Figure 15: Terrorist Organization Recruitment Pressure Parent Analysis

Figure 16 suggests that the Israeli/Palestinian policy node and the information operations/public diplomacy nodes have the largest potentials to change the likelihood of the resentment node, both in the inhibiting and promoting directions. Similar to the sensitivity analysis of the current and future attack nodes, this result is impacted by both direct and indirect links. There is visually a discernible difference between the nodes when looking at their respective potential to further inhibit. However, the potentials to further promote are very similar, especially for the bottom four nodes; information operations/public diplomacy, leadership, military presence, and Iraq policy. As before, while SIAM does not directly provide the necessary output to conduct such a test, a mechanism for testing the statistical significance of the differences would be beneficial to the analysis. By visual inspection, it is possible that no statistically significant difference exists between the five factors with regards to their ability to further promote the probability of reducing resentment toward the United States.
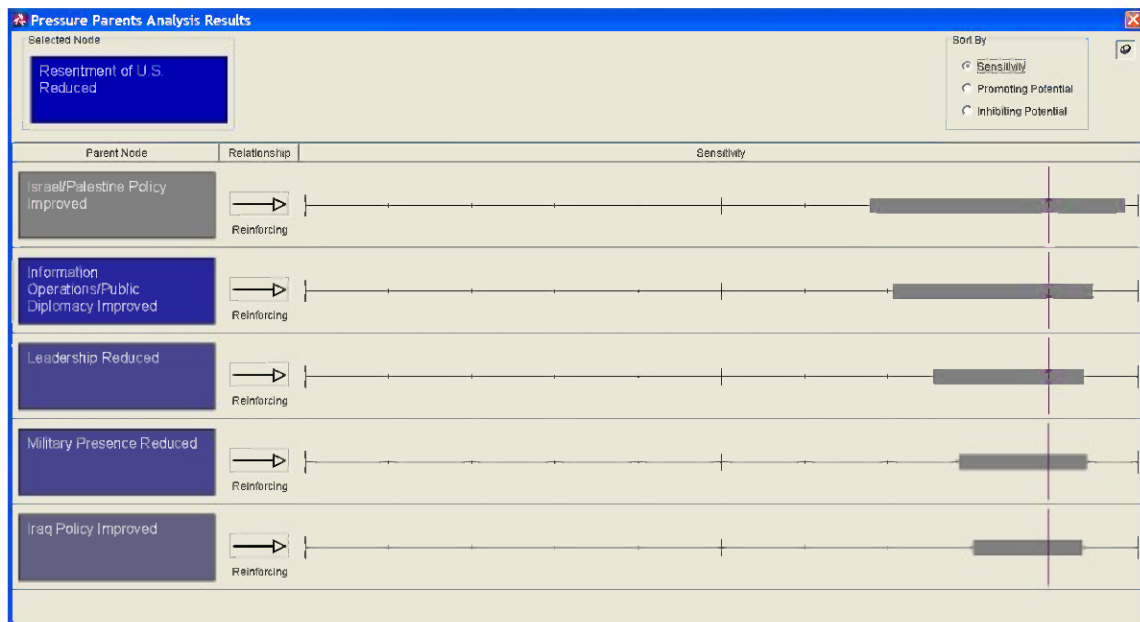
Figure 16: Resentment of U.S. Pressure Parent Analysis

Figure 17 suggests that the reduction of repressive regimes node has the greatest potential to change the likelihood of the underlying causes node. Reducing repressive regimes has more than double the potential to further inhibit the probability of reducing the underlying causes than either the education node or the poverty node. Similarly, reducing repressive regimes also has more than double the potential to further promote the probability of reducing the underlying causes. Again, these findings are the result of both direct and indirect links.
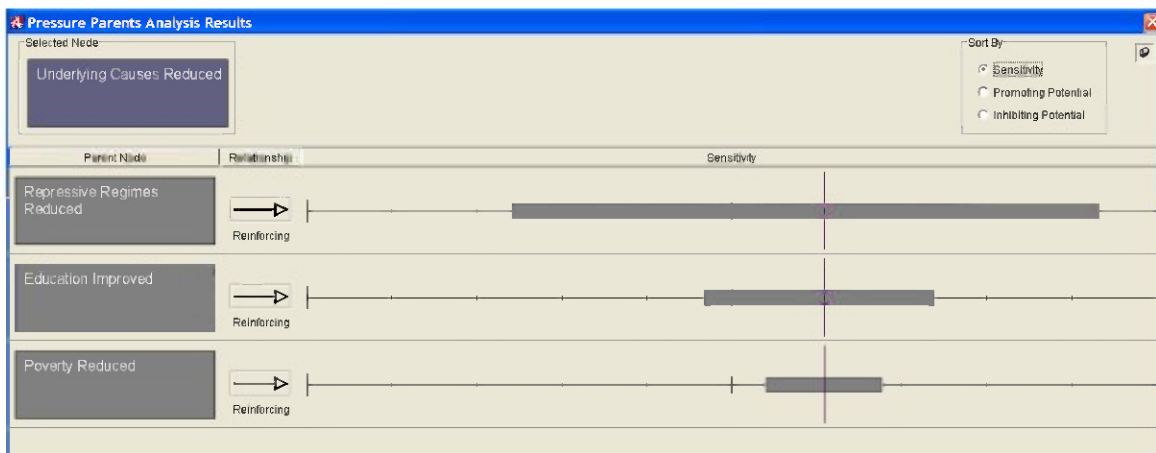
Figure 17: Underlying Causes Pressure Parent Analysis

With the exception of the findings regarding the intelligence node, the sensitivity analysis confirmed the previous findings from the influence ranking and impact analyses. Due to its incorporation of the indirect links, the sensitivity analysis allows for a more robust comparison of the relative influences of the thirteen original factors. While all the factors are arguably important in prosecuting the War on Terror, the notional influence net and its corresponding analysis suggest that six may exert relatively more influence. These six include reducing the leadership and followers of the terrorist organizations, improving our intelligence campaign as well as information operations and public

diplomacy, reduction of repressive regimes and promotion of democratic governments, and improvements to the United States' perceived policy toward Israel. The notional model also suggests that improving defensive measures, reducing finances, reducing poverty, and improving education tend to have the least potential influence.

5. Conclusions and Further Research

5.1. Conclusions

The first phase of this study was designed to identify and consolidate the list of factors believed to potentially exert influence on the transnational terrorist threat to the United States. Chapter 2 identified 13 such factors. Comparing to the factors included in the National War College Student Task Force's initial 2002 study and the subsequent National Strategy for Combating Terrorism, the 13 identified factors in this study have nearly all been incorporated. The National War College Student Task Force specifically identified 11 of the 13 factors, and further delineated those impacting the underlying causes and resentment toward the United States. Only Iraqi policy and military presence were excluded from the findings. The subsequent National Strategy for Combating Terrorism incorporated 10 of the 13 factors, excluding specific targeting of Iraqi policy, military presence, and education. Both documents have adequately determined what needs to be done. However, they do not attempt to prioritize the relative importance of the factors. Given the reality of fiscal and resource constraints, such determinations would be beneficial.

The second phase of this study suggested a method to analyze the potential interactions and relative importance of each factor to create a prioritization mechanism to support resource allocation decisions. The suggested framework utilizes an Influence Net approach. To demonstrate the method, a notional influence net was developed and analyzed using the SIAM software application. While only based on notional data, the illustrative model does serve as a starting point for identifying the more influential factors

70

among the original set identified in Chapter 2. In order to provide operationally valid output, further research, and especially subject-matter expertise, would be required to refine the model's input data.

Based upon the notional model developed in this study, the following measures should be taken. The current efforts to eliminate or neutralize the existing transnational terrorist organization structure, to include both the leaders and followers, should be continued. These efforts serve both to reduce the current threat and provide disincentive to deter the future threat. The United States should emphasize improvement of intelligence gathering and sharing. Improved intelligence acts as a catalyst to nearly every other factor. Initiatives to improve our information operations and public diplomacy should be implemented. This would aid both our short-term and long-term fights against terrorism. Finally, the United States should aggressively pursue measures targeted at reducing the underlying causes that lead to terrorism as well as reducing Arab and Muslim resentment toward the United States. The primary avenues to these goals are to eliminate repressive regimes and improve the perceptions of our Israeli/Palestinian policy, respectively.

Conversely, the notional model suggests the relative ineffectiveness of the following factors in influencing the transnational terrorist threat: defensive measures, terrorist financing, poverty, and education. The United States should carefully consider pursuing these measures if they channel resources away from those factors with higher influence potentials.

5.2. Recommended Reading

In conducting this study, it was readily apparent that the terrorist attacks of September 11, 2001 motivated a great deal of research and published material on the subject of terrorist motivations and influences. Based on the literature review, the study attempted to identify the top relevant sources to provide a starting point for future researchers pursuing similar topics.

A study of this nature should not begin without first reviewing the United States' current strategy to prosecute the War on Terror. This strategy is dictated in the National Strategy for Combating Terrorism, published in Feb 2003.

Immediately following attacks of September 11, 2001, students at the National War College took the initiative to form the school's Student Task Force on Combating Terrorism. In May, 2002, they published Combating Terrorism in a Globalized World. Given the immediacy and time constraints of the effort, it identified many of the factors the government and academic communities later confirmed. Due to this effort, the Student Task Force was subsequently asked to join the Interagency Working Group that drafted the aforementioned National Strategy.

Russell Howard and Reid Sawyer's Terrorism and Counterterrorism: Understanding the New Security Environment, Readings and Interpretations provides an all-encompassing collection of succinct articles covering a full range of topics concerning the War on Terrorism. Similarly, Marc Sageman's Understanding Terrorist Networks provides an excellent overview of the current Al Qaida threat. The book opens with an overview of Al Qaida's evolution and their strategy shift from the near-enemy to the far-enemy during their exile in Sudan. The work analyzes the backgrounds of 172 terrorists

to identify trends to disprove common misconceptions and prove linkages that can be used in combating terrorism. Sageman's book gives an optimistic account of where we currently stand in the War on Terror, and the challenges we face if the currently degraded network re-energizes.

Three significant journal articles noted were Scott Atran's "Mishandling Suicide Terrorism" from the Washington Quarterly, Bruce Hoffman's "The Changing Face of Al Qaeda and the Global War on Terrorism" from Studies in Conflict and Terrorism, and Mark Basile's "Going to the Source: Why Al Qaeda's Financial Network is Likely to Withstand the Current War on Terrorist Financing" from Studies in Conflict and Terrorism. Atran's article studies suicide terrorists and makes a convincing argument for addressing the underlying factors that lead to terrorism versus attacking the current terrorists, to ultimately win the War on Terrorism. Hoffman describes the possible ineffectiveness of the Afghanistan campaign in stopping Al Qaida, and proposes a series of alternative strategies to combat an adaptive Al Qaida. Basile's article focuses on terrorist financing and argues that the initial attack on the terrorists' financial infrastructure was ineffectual. He then proposes several alternative strategies to further reduce their financial support.

The Defense Science Board's Report of the Defense Science Board Task Force on Strategic Communication provides a detailed account of the United States' strategic communication. The report presents a persuasive argument for the inadequacy of current efforts and sets an aggressive roadmap of organizational, collaborative, and tactical initiatives.

Michael Meyer's paper Arab Perceptions Toward US Foreign Policy: Why

Perceptions Matter and What Can be Done to Improve America's Image in the Arab

World describes the most prominent sources of Arab resentment toward the United

States, based on personal experiences both living in and working throughout the Middle

East.

Specific to this study and the use of SIAM as an analytic tool, Julie Rosen and

Wayne Smith's Influence Net Modeling with Causal Strengths: An Evolutionary

Approach discusses the Influence Net modeling approach and explains the CAST logic.

The focus of the paper is on describing the CAST logic for computing conditional

probabilities.

Finally, Larry Wentz and Lee Wagenhals' Effects Based Operations for

Transnational Terrorist Organizations: Assessing Alternative Courses of Action to

Mitigate Terrorist Threats presents a parallel study. Their work identifies potential

factors and uses the CAESAR II/EB software application to build and analyze applicable

influence nets.

5.3. Recommendations for Further Research

This research effort suggested an Influence Net framework for modeling the

interactions and impacts of various factors influencing the transnational terrorist threat to

the United States. Further research is required to both expand the model and refine the

inputs in order to create an operationally valid and useful decision-making aid.

Each of the 13 initial nodes in the suggested model could be expanded into its

own sub-model which could feed into the overarching influence net. This would require

an expanded literature review of the respective topic, solicitation of direct input and opinions from subject-matter experts in each particular field, and, where possible, quantification of the probabilities through some mechanism of statistical analysis on existing data. This would ensure inclusion of a much more comprehensive set of factors influencing each node, as well as more accurate evaluations of the model's assessed interactions and probabilities.

A further expansion to the model could also include factors outside the control of the United States. This study only identified those factors the United States has the ability to influence. The uncertainty caused by these external factors would add realism to the existing model.

Finally, the model could be improved by incorporating a temporal element. The current model is static and requires updating over time to provide decision-makers with current assessments of the factors. In light of the costs of the various potential strategies, it would be more beneficial to the decision-makers to see the temporal impact of various measures now; not over time as the model is subsequently adapted.

Appendix A: Influence Net Input Data for Notional Example

Factor	Prob (1-9)	Influences	Influenced by	Impact if True (1-9)	Impact if False (1-9)
Leadership Reduced (Ldrs Reduced)	5	Followers Reduced Finances Reduced Iraq Improved Mil. Pres. Reduced IO/PD Improved Ed. Improved	Followers Reduced Intel Improved I/P Improved Iraq Improved Mil. Pres. Reduced IO/PD Improved Ed. Improved	8 6 6 8	4 5 4 2
		Current Future Resentment		7 9 7	4 3 4
Followers Reduced	5	Ldrs Reduced Iraq Improved Mil. Pres. Reduced	Ldrs Reduced Intel Improved I/P Improved Iraq Improved Mil. Pres. Reduced IO/PD Improved Ed. Improved Poverty Reduced Rep. Reg. Reduced	6 8	4 2
		Current Future		7 9	4 3
State Sprt Reduced	5	Finances Reduced IO/PD Improved Ed. Improved Poverty Reduced Rep. Reg. Reduced	Intel Improved I/P Improved Iraq Improved Mil. Pres. Reduced IO/PD Improved Ed. Improved Poverty Reduced Rep. Reg. Reduced	6	5
		Current Future		6 8	5 5

Appendix A cont.: Influence Net Input Data for Notional Example

Factor	Prob (1-9)	Influences	Influenced by	Impact if True (1-9)	Impact if False (1-9)
Intel Improved	5	Ldrs Reduced	Mil. Pres. Reduced	8	4
		Followers Reduced	IO/PD Improved	8	4
		State Sprt Reduced		6	4
		DM Improved		8	5
		Finances Reduced		8	4
		I/P Improved		6	5
		Iraq Improved		8	4
		Mil. Pres. Reduced		6	4
		IO/PD Improved			
		Ed. Improved		6	4
		Poverty Reduced		6	4
		Rep. Reg. Reduced		6	4
		Current		7	4
		Future		7	4
Def. Measures Improved (DM Improved)	5		Intel Improved		
		Current		6	5
		Future		6	5
Finances Reduced	5	Iraq Improved	Ldrs Reduced		
		Ed. Improved	State Sprt Reduced		
			Intel Improved		
			I/P Improved		
			Iraq Improved		
			Mil. Pres. Reduced		
			IO/PD Improved		
			Ed. Improved		
			Rep. Reg. Reduced		
		Current		6	5
		Future		7	5
Israel Policy Improved (I/P Improved)	5	Ldrs Reduced	Intel Improved	8	4
		Followers Reduced	IO/PD Improved	6	4
		State Sprt Reduced	Ed. Improved	8	4
		Finances Reduced		8	4
		Iraq Improved		6	4
		IO/PD Improved		8	4
		Current		6	5
		Resentment		9	3

Appendix A cont.: Influence Net Input Data for Notional Example

Factor	Prob (1-9)	Influences	Influenced by	Impact if True (1-9)	Impact if False (1-9)
Iraq Policy Improved (Iraq Improved)	5	Ldrs Reduced Followers Reduced State Sprt Reduced Finances Reduced Mil. Pres. Reduced IO/PD Improved	Ldrs Reduced Followers Reduced Intel Improved Finances Reduced I/P Improved Mil. Pres. Reduced IO/PD Improved Ed. Improved Poverty Reduced Rep. Reg. Reduced	 6 6 6 6	 4 4 4 4
		Current Resentment		6 7	4 3
Mil. Presence Reduced (Mil. Pres. Reduced)	5	Ldrs Reduced Followers Reduced State Sprt Reduced Intel Improved Finances Reduced Iraq Improved IO/PD Improved	Ldrs Reduced Followers Reduced Intel Improved Iraq Improved	 8 6 6	 4 4 4
		Current Resentment		6 8	5 3
IO/Public Dip. Improved (IO/PD Improved)	5	Ldrs Reduced Followers Reduced State Sprt Reduced Intel Improved Finances Reduced I/P Improved Iraq Improved Ed. Improved Rep. Reg. Reduced	Ldrs Reduced State Sprt Reduced Intel Improved I/P Improved Iraq Improved Mil. Pres. Reduced Ed. Improved Poverty Reduced Rep. Reg. Reduced	 6 8	 4 4
		Current Resentment		6 9	5 3

Appendix A cont.: Influence Net Input Data for Notional Example

Factor	Prob (1-9)	Influences	Influenced by	Impact if True (1-9)	Impact if False (1-9)
Education Improved (Ed. Improved)	5	Ldrs Reduced	Ldrs Reduced	6	4
		Followers Reduced	State Sprt Reduced	6	4
		State Sprt Reduced	Intel Improved	6	4
		Finances Reduced	Finances Reduced	8	4
		I/P Improved	IO/PD Improved	6	4
		Iraq Improved	Poverty Reduced	6	4
		IO/PD Improved	Rep. Reg. Reduced	8	4
		Poverty Reduced		6	4
		Rep. Reg. Reduced		6	4
		Current		6	5
		Causes		7	4
Poverty Reduced	5	Followers Reduced	State Sprt Reduced	6	4
		State Sprt Reduced	Intel Improved	6	4
		Iraq Improved	Ed. Improved	6	4
		IO/PD Improved	Rep. Reg. Reduced	8	4
		Ed. Improved			
		Causes		7	4
Rep. Reg. Reduced	5	Followers Reduced	State Sprt Reduced	8	2
		State Sprt Reduced	Intel Improved	8	2
		Finances Reduced	IO/PD Improved	8	2
		Iraq Improved	Ed. Improved		
		IO/PD Improved			
		Ed. Improved			
		Poverty Reduced		8	2
		Causes		9	2
Resentment Reduced	5	Current Attacks		7	3
		Future Attacks		8	2
		Recruitment		7	3
Causes Reduced	5	Recruitment		9	2
Recruitment Reduced	5	Future		9	1
Current Attacks Reduced	5	Total		9	1
Future Attacks Reduced	5	Total		9	1

79

Bibliography

Al-Maitami, Mohammed. "Education as a Strategic Deterrent in a Backward Society (Yemen as a Case)," Yemen Gateway, http://www.al-bab.com/yemen/econ/maitami3.htm. Internet accessed 6 May 2005.

Atran, Scott. "Mishandling Suicide Terrorism," Washington Quarterly, vol. 27, no. 3, May 2004: pp. 67-90.

Basile, Mark. "Going to the Source: Why Al Qaeda's Financial Network is Likely to Withstand the Current War on Terrorist Financing," Studies in Conflict and Terrorism, vol. 27, no. 3, May-Jun 2004: pp. 169-185.

Beinart, Peter. "Out of Africa: 12/26/94 and Back to the 1980's," 12 Jan 1995, http://www.hartford-hwp.com/archives/27c/392.html. Internet accessed on 20 May 2005.

Bush, George W. "Address to a Joint Session of Congress and the American People," 20 Sep 2001, http://www.whitehouse.gov/news/releases/2001/09/20010920-8.html. Internet accessed 12 May 2005.

Bush, George W. "Presidential Address to the Nation," 7 Oct 2001, http://www.whitehouse.gov/news/releases/2001/10/20011007-8.html. Internet accessed on 12 May 2005.

"Causes of 9/11: Muslim Militant Extremists?," Council on Foreign Relations, http://cfrterrorism.org/causes/muslim.html. Internet accessed on 5 May 2005.

Clemen, Robert T., and Terence Reilly. Making Hard Decisions with DecisionTools, Duxbury Thomson Learning, 2001.

Conetta, Carl. "Strange Victory: A Critical Appraisal of Operation Enduring Freedom and the Afghanistan War," Project of Defense Alternatives, http://www.comw.org/pda/0201strangevic.html#3. Internet accessed on 4 May 2005.

"East Jerusalem," Wikipedia, http://en.wikipedia.org/wiki/east_jerusalem. Internet accessed 20 May 2005.

"Education in the Kingdom of Saudi Arabia," Ain-al-Yaqeen, http://www.ain-al-yaqeen.com/issues/19971215/feat8en.htm. Internet accessed 6 May 2005.

"Egypt – Economy," CIA World Factbook,
http://www.cia.gov/cia/publications/factbook/geos/eg.html#econ. Internet accessed 6
May 2005.

Evers, Tré. "Successes of and Challenges Facing U.S. Public Diplomacy," Statement
before the House Committee on Government Reform Subcommittee on National
Security, Emerging Threats and International Relations, 23 Aug 2004.
http://www.state.gov/r/adcompd/rls/35707.htm. Internet accessed 20 May 2005.

Haddad, Simon, and Hilal Khashan. "Islam and Terrorism: Lebanese Muslim Views on
September 11," Journal of Conflict Resolution, vol. 46, no. 6, Dec 2002: pp. 812-828.

Haider, Sajjad, and Abbas K. Zaidi. "Transforming Timed Influence Nets into Time
Sliced Bayesian Networks," Command and Control Research and Technology
Symposium, 2004.
http://www.dodccrp.org/events/2004/CCRTS_San_Diego/CD/papers/125.pdf.
Internet accessed 27 May 2005.

Hoffer, Eric. The True Believer: Thoughts on the Nature of Mass Movements, New
York: Time Incorporated, 1963.

Hoffman, Bruce. "The Changing Face of Al Qaeda and the Global War on Terrorism,"
Studies in Conflict and Terrorism, vol. 27, no. 6, Nov-Dec 2004: pp. 549-560.

Howard, Russell, and Reid Sawyer. Terrorism and Counterterrorism: Understanding the
New Security Environment, Readings and Interpretations, Mcgraw-Hill, 2003.

Khan, Muqtedar. "First Establish the Will to Peace – Then Chart the Way to Peace," Al
Jazeerah, 12 Jul 2003. http://www.brookings.edu/views/op-
ed/fellows/khan20030712.htm. Internet accessed 5 Apr 2005.

Li, Quan, and Drew Schaub. "Economic Globalization and Transnational Terrorism,"
Journal of Conflict Resolution, vol. 48, no. 2, Apr 2004: pp. 230-258.

Lindamood, Brian. Containment Revisited: An Old Approach to Future Challenges, US
Army War College, 2002.

Lynch, Colum. "Volunteers Swell a Reviving Qaeda, UN Warns," International Herald
Tribune, 19 Dec 2002.

Md Salleh, Hasny Bin. *War Against Terrorism: Malaysia's Experience in Defeating
Terrorism*, US Army War College, 2004.

Meyer, Michael B. Arab Perceptions Toward US Foreign Policy: Why Perceptions Matter and What Can be Done to Improve *America's Image in the Arab World*, USAF Institute for National Security Studies Occasional Paper 48, Feb 2003, pp. 41-88. http://atlas.usafa.af.mil/inss/OCP/OCP48.pdf. Internet accessed 14 May 2005.

Mickolus, Edward F. "How do We Know We're Winning the War Against Terrorists? Issues in Measurement," Studies in Conflict and Terrorism, vol. 25, no. 3, May-Jun 2002: pp. 151-160.

"Middle East," Encarta, http://encarta.msn.com/encyclopedia_761579298_2/Middle_East.html. Internet accessed 6 May 2005.

National Strategy for Combating Terrorism, Feb 2003, http://www.whitehouse.gov/news/releases/2003/02/counter_terrorism/counter_terrorism_strategy.pdf. Internet accessed 14 May 2005.

Nicholson, Ann, and Kevin Korb. "Bayesian Artificial Intelligence," Taylor and Francis, CRC Press, 2003. http://www.csse.monash.edu.au/bai/book/appendix_b.pdf. Internet accessed 15 May 2005.

Paté-Cornell, Elisabeth, and Seth Guikema. "Probabilistic Modeling of Terrorist Threats: A Systems Analysis Approach to Setting Priorities Among Countermeasures," Military Operations Research, vol. 7, no. 4, 2002: pp. 5-23.

Pintak, Lawrence. In the Eye of the Beholder: How Mass-mediated Perceptions Drive Terror, presented at Roots of Terrorism Colloquium, 13 Mar 2004.

Pollack, Kenneth M. "Securing the Gulf," Foreign Affairs, vol. 82, no. 4, Jul-Aug 2003, pp. 2-17. http://www.foreignaffairs.org/20030701faessay15401-p10/kenneth-m-pollack/securing-the-gulf.html. Internet accessed 5 Apr 05.

Report of the Defense Science Board Task Force on Strategic Communication, Defense Science Board, Department of Defense, Sep 2004.

Rosen, Julie A., and Wayne L. Smith. Influence Net Modeling with Causal Strengths: An Evolutionary Approach, Command and Control Research and Technology Symposium, 1996.

Sageman, Marc. Understanding Terror Networks, Philadelphia, University of Pennsylvania Press, 2004.

Sands, Jeffrey I., and Bradd C. Hayes. Understanding and Using SIAM, Naval War College. http://www.au.af.mil/au/awc/awcgate/modeling/usesiam.doc. Internet accessed 14 May 2005.

Satloff, Robert. The Battle of Ideas in the War on Terror: Essays on U.S. Public Diplomacy in the Middle East, The Washington Institute for Near East Policy, 2004.

SIAM (Situational Influence Assessment Module) User's Manual, Version 5.0, Science Applications International Corporation, Aug 2003.

Starr, Barbara. "U.S. Issues Most Wanted List," CNN.com/World, http://www.cnn.com/2003/WORLD/meast/04/11/sprj.irq.wanted.cards/. Internet accessed 4 May 2005.

Testas, Abdelaziz. "Determinants of Terrorism in the Muslim World: An Empirical Cross-Sectional Analysis," Terrorism and Political Violence, vol. 16, no. 2, Apr-Jun 2004: pp. 253-273.

"The Money: Drying Up the Funds for Terror," Council on Foreign Relations, http://cfrterrorism.org/responses/money/html. Internet accessed 5 May 2005.

The National War College Student Task Force on Combating Terrorism. Combating Terrorism in a Globalized World, National War College, May 2002.

"The War in Iraq Costs," National Priorities Project, http://costofwar.com/. Internet accessed 14 May 2005.

"UN Security Council Resolution 242," Wikipedia. http://en.wikipedia.org/wiki/UN_Security_Council_Resolution_242. Internet accessed 14 May 2005.

"Unemployment Covers 25 Million Persons in the Arab States," ArabicNews.com http://www.arabicnews.com/ansub/Daily/Day/050212/2005021201.html. Internet accessed 6 May 2005.

Victoroff, Jeff. "The Mind of the Terrorist: A Review and Critique of Psychological Approaches," Journal of Conflict Resolution, vol. 49, no. 1, Feb 2005: pp. 3-42.

Wagenhals, Lee W., and Alexander H. Levis. "Converting Influence Nets with Timing Information to a Discrete Event System Model, A Colored Petri Net," Second Workshop and Tutorial on Practical use of Coloured Petri Nets and Design/CPN, Oct

1999. http://www.daimi.au.dk/CPnets/workshop99/papers/Wagenhals.pdf. Internet accessed 14 May 2005.

Warden, John A., III, "The Enemy as a System," Airpower Journal, vol. 9, no. 1, Spring 1995. http://www.airpower.maxwell.af.mil/airchronicles/apj/warden.html. Internet accessed 4 May 2005.

Wentz, Larry, and Lee W. Wagenhals. "Effects Based Operations for Transnational Terrorist Organizations: Assessing Alternative Courses of Action to Mitigate Terrorist Threats," Command and Control Research and Technology Symposium, 2004. http://www.dodccrp.org/events/2004/CCRTS_San_Diego/CD/papers/178.pdf. Internet accessed 29 May 2005.

Windsor, Jennifer L. "Promoting Democratization can Combat Terrorism," Washington Quarterly, vol 26, no. 3, Summer 2003: pp. 43-58.

Zimmerman, John C. "Sayyid Qutb's Influence on the 11 September Attacks," Terrorism and Political Violence, vol 16, no. 2, Apr-Jun 2004: pp. 222-252.

REPORT DOCUMENTATION PAGE

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (From – To)
07-06-2005	Graduate Research Project	Apr 2005 – Jun 2005

4. TITLE AND SUBTITLE

INFLUENCING TRANSNATIONAL TERRORIST ORGANIZATIONS: USING INFLUENCE NETS TO PRIORITIZE FACTORS

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Fatur, Roy P., Major, USAF

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S)
Air Force Institute of Technology
Graduate School of Engineering and Management (AFIT/EN)
2950 Hobson Street, Building 641
WPAFB OH 45433-7765

8. PERFORMING ORGANIZATION REPORT NUMBER

AFIT/GOS/ENS/05-06

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Behavioral Influences Analysis Division (NASIC/BPB)
4180 Watson Way
WPAFB OH 45433-5648

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Since the attacks of September 11, 2001, government agencies and scholars have combined to generate a wide range of studies and literature describing individual factors believed to influence the transnational terrorist threat against the United States. Given the fiscal reality of limited resources, the United States cannot fully fund and implement a complete set of measures to counteract all the identified factors. The purpose of this study is to consolidate this array of factors; and more importantly, to suggest a framework for analyzing the interactions and relative importance of each factor to support resource allocation decisions. A comprehensive literature review identified 13 factors having potential influence. These factors were then analyzed using an Influence Net approach. Utilizing notional interaction and influence assessments, the suggested framework highlighted six of the factors with relatively greater potential to influence the terrorist threat. These six factors span the temporal spectrum from near-term impacts targeted against the existing terrorist threat to long-term strategies directed at influencing the "next generation" terrorist threat. Focusing on the near-term, eliminating or neutralizing both the terrorist leadership and their followers was highly influential in the model. Improving intelligence capabilities as well as our information operations and public diplomacy campaigns significantly impacted both the near and long-term threat. Finally, influencing the long-term terrorist threat was best accomplished through a combination of reducing resentment toward the United States, with Israeli policy as a driving factor; and reduction of the underlying causes of terrorism, with elimination of repressive regimes as the primary factor.

15. SUBJECT TERMS

Terrorism, Influence Net, Factors of Success

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Richard F. Deckro, Civ (ENS)
U	U	U	UU	94	19b. TELEPHONE NUMBER (Include area code) (937) 255-6565, ext 4325; e-mail: Richard.Deckro@afit.edu